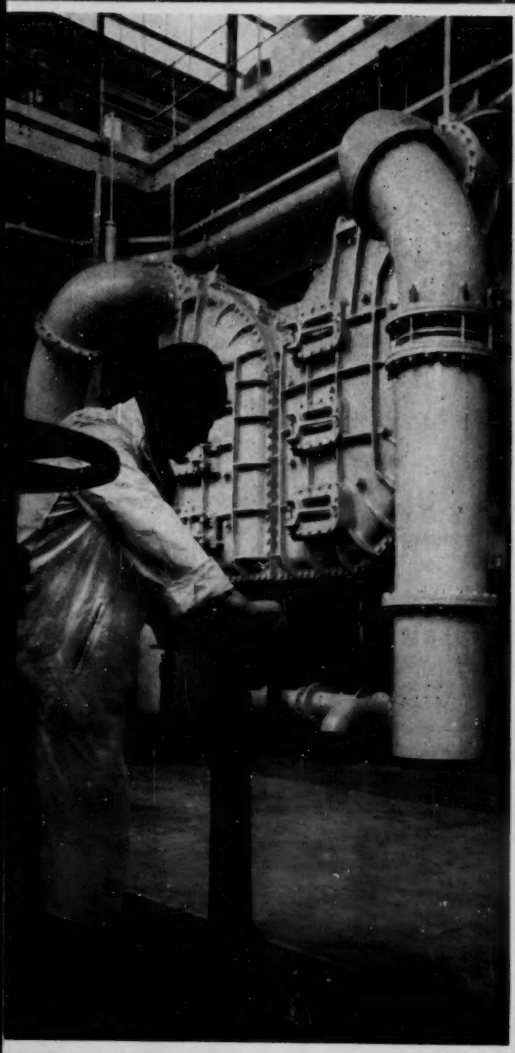


Chemical Week

October 20, 1956

Price 35 cents



Atomic blasts do less harm to packaging materials than you'd expect First test results . . . p. 22

Businesses go home as Europeans take over management of U.S. foreign subsidiaries p. 32

British turn on A-power, look for answers to problems of nuclear economics p. 74

Survey surprise: industry rivals household as top consumer of surface-active agents p. 90

Bar-soap makers are testing a raft of new product ideas in latest plant building try p. 100



KEYS TO BETTER PROCESSING

Mathieson glycol ether solvents... Poly-Solv's

One or more of the glycol ether solvents in Mathieson's remarkably versatile Poly-Solv series may open the door to more effective, more economical manufacturing for you. For instance:

POLY-SOLV EM

ethylene glycol monomethyl ether

...has the lowest boiling point. Used for sealing moistureproof cellophane, as a dye penetrant and as a thinner for varnishes.

POLY-SOLV DM

diethylene glycol monomethyl ether

...used in brake fluids, brushing lacquers, stamp pad ink dyes and textile dye pastes, and in cosmetics manufacturing.

POLY-SOLV EE

ethylene glycol monoethyl ether

...used in lacquers, to clarify soap-hydrocarbon systems, and as a solvent for paints, plastics and dyes.

POLY-SOLV DE

diethylene glycol monoethyl ether

...used in plastics manufacturing, brake fluids, non-grain raising wood stains and in industrial cleaners to dissolve water soluble greases.

POLY-SOLV EB

ethylene glycol monobutyl ether

...used to strengthen bluish resistance and reduce surface defects for many coatings, particularly hot-spray lacquers.

POLY-SOLV DB

diethylene glycol monobutyl ether

...used where very low evaporation rate is required; particularly valuable in vinyl-organosols and in making textile oils.

MATHIESON CHEMICALS

OLIN MATHIESON CHEMICAL CORPORATION
INDUSTRIAL CHEMICALS DIVISION • BALTIMORE 3, MD.

For data sheets and other important information, write or call your Olin Mathieson representative today.

Poly-Solv® is a trademark

4299



INORGANIC CHEMICALS: Ammonia • Bicarbonate of Soda • Carbon Dioxide • Caustic Potash • Caustic Soda • Chlorine • Hydrazine and Derivatives
Hydrochloric Products • Muriatic Acid • Nitrate of Soda • Nitric Acid • Soda Ash • Sodium Chloride Products • Sulphate of Alumina • Sulphur (Processed)
Sulphuric Acid-ORGANIC CHEMICALS: Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • Glycol Ether Solvents • Ethylene Dichloride • Dichloroethylene
Formaldehyde • Methanol • Sodium Methylate • Hexamine • Ethylene Diamine • Polyamines • Ethanolamines • Trichlorobenzene • Polychlorobenzene • Trichlorophenol



No matter how you do it, get word to Morton for help in solving any salt problem

The Morton Salt Company offers fast help from salt specialists—at no cost to you. And we mean on any salt problem. Morton can help you, whether it be consultation on the best grade or grades of salt for the best, most economical job in any phase of your particular operation . . . or help in planning a new water-softening system . . . or in modernizing or expanding a brine installation.

We can dispatch a Morton Consulting Engineer in your area to your plant. He's an expert when it comes to solving salt problems, and he's backed by the services of chemists and salt scientists at Morton's ultra-modern salt research laboratory. Best of all, these services don't cost you a cent—and they may well save you hundreds of dollars.

Whatever your salt needs, Morton can fill them promptly and economically. Morton produces many grades of salt for use by the chemical industry. Only

Morton has nine strategically located plants to serve you. And only Morton can offer fast delivery from a bag to a trainload, at favorable prices and freight, anywhere in the country.

Sending a carrier pigeon is recommended only if you happen to have one familiar with flight patterns to our communications window. The best way to get help, of course, is to write or wire.

MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. CW-10, 120 So. La Salle Street,
Chicago 3, Illinois



NOW AVAILABLE IN TANK CAR QUANTITIES

New
Products

nonyl phenol

First in the new Stepan line of alkyl phenols is nonyl phenol now available in tank car quantities. Nonyl phenol has a relatively high viscosity, a slight phenolic odor, and is a pale yellow liquid. Indicated uses for nonyl phenol include its use as a starting point in the manufacture of many plasticizers and resins. It is also of interest for use as a non-ionic surface active agent intermediate as well as an intermediate in the manufacture of lubricating oil additives, and as a basic raw material in many other ethoxylated products.

dinonyl phenol

Also from the new Stepan plant at Millsdale near Joliet, Illinois, and available in substantial quantities is dinonyl phenol. It is quite similar in physical properties and characteristics to nonyl phenol and has many of the same indicated uses. Like nonyl phenol it can be reacted with ethylene oxide to give polyoxethylene derivatives. It is virtually insoluble in water. Dinonyl phenol offers higher oil solubility than nonyl phenol. Both are soluble in benzene, heptane, chlorinated solvents, aliphatic alcohols, aniline, and ethylene glycol. Other possible uses include anti-oxidant and anti-skinning agent.

New
STEPAN
Products

WRITE FOR SAMPLES

STEPAN

CHEMICAL COMPANY

20 North Wacker Drive
Telephone: CEtral 6-5511

Chicago 6, Illinois

OTHER STEPAN ALKYLATED PHENOLS

Also available
are octyl, dioctyl,
and butyl phenol.
Other special higher
alkyl phenols
can be tailored to
your requirements.

FATTY ALCOHOL SULFATES - BULK LIQUID DETERGENTS - SULFONATED OILS - AMIDES - FOAM STABILIZERS - ALKYLPHENOL POLYALKYL SULFATES - NON-IONIC DETERGENTS - CUSTOM ETHOXYLATION - ALKYL PHENOLS

Chemical Week

TOP OF THE WEEK

October 20, 1956

Small process industry businessmen are turning more and more to the government for business loans p. 21

Here's why Smith-Douglass hopes to take over Texas City Chemical's idled plantp. 23

SAACI sessions: chemical salesmen learn how better time-scheduling pays offp. 41

New survey shows steep climb in research spending by synthetic organics makersp. 61

14 OPINION

14 MEETINGS

17 BUSINESS NEWSLETTER

22 First report on how chemical materials fare in an atom bomb blast

24 How chemical process industries are affected by latest Supreme Court moves

25 WASHINGTON ANGLES

27 CHARTING BUSINESS

31 ADMINISTRATION

New soft-coal pact helps set stage for next year's chemical wage drive

Shake-up in leadership of chemical union seen as shift toward militancy

32 'Yankee'-trained foreigners taking over all but top jobs in U.S. overseas branches

41 SALES

46 How creative selling ties in with 'organized thinking'

61 RESEARCH

62 Oral polio vaccine heads for field trials

62 NSF report reveals nonprofit and commercial laboratories prosper, don't compete

68 Budd sets up facility to fabricate radioactive materials

74 PRODUCTION

British get world's first large-scale supply of nuclear power

79 Bureau of Mines' smelting process may clear way to titanium from low-grade domestic ores

87 TECHNOLOGY NEWSLETTER

90 MARKETS

New exhaustive survey challenges established concepts about end-uses of surface-active agents

92 Report to Congress highlights amount of business U.S. chemical marketers are doing behind the iron curtain

97 MARKET NEWSLETTER

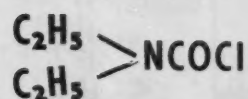
100 SPECIALTIES

New wraps, new scents, new colors, new ingredients—a raft of ideas are on trial as bar-soap makers jostle for sales leadership

104 Hot news in electrical field: S-W launches new high-temperature and chemical-resistant varnish

DIETHYL CARBAMYL CHLORIDE

Structural Formula:



Molecular Weight:
135.6

Boiling Point:

at 18mm —76-78°C

at 20mm —80-83°C

at 25mm —87-90°C

Refractive Index at 20°C:

1.450-1.458

Specific Gravity at 20°C:

1.05-1.09

Assay:

95% Minimum

MANUFACTURED BY

gamma

chemical corporation

GREAT MEADOWS, N. J.

SOLE SALES AGENTS

Fisher

chemical co., inc.

220 E. 42nd STREET, NEW YORK 17, N. Y.

Murray Hill 2-2587

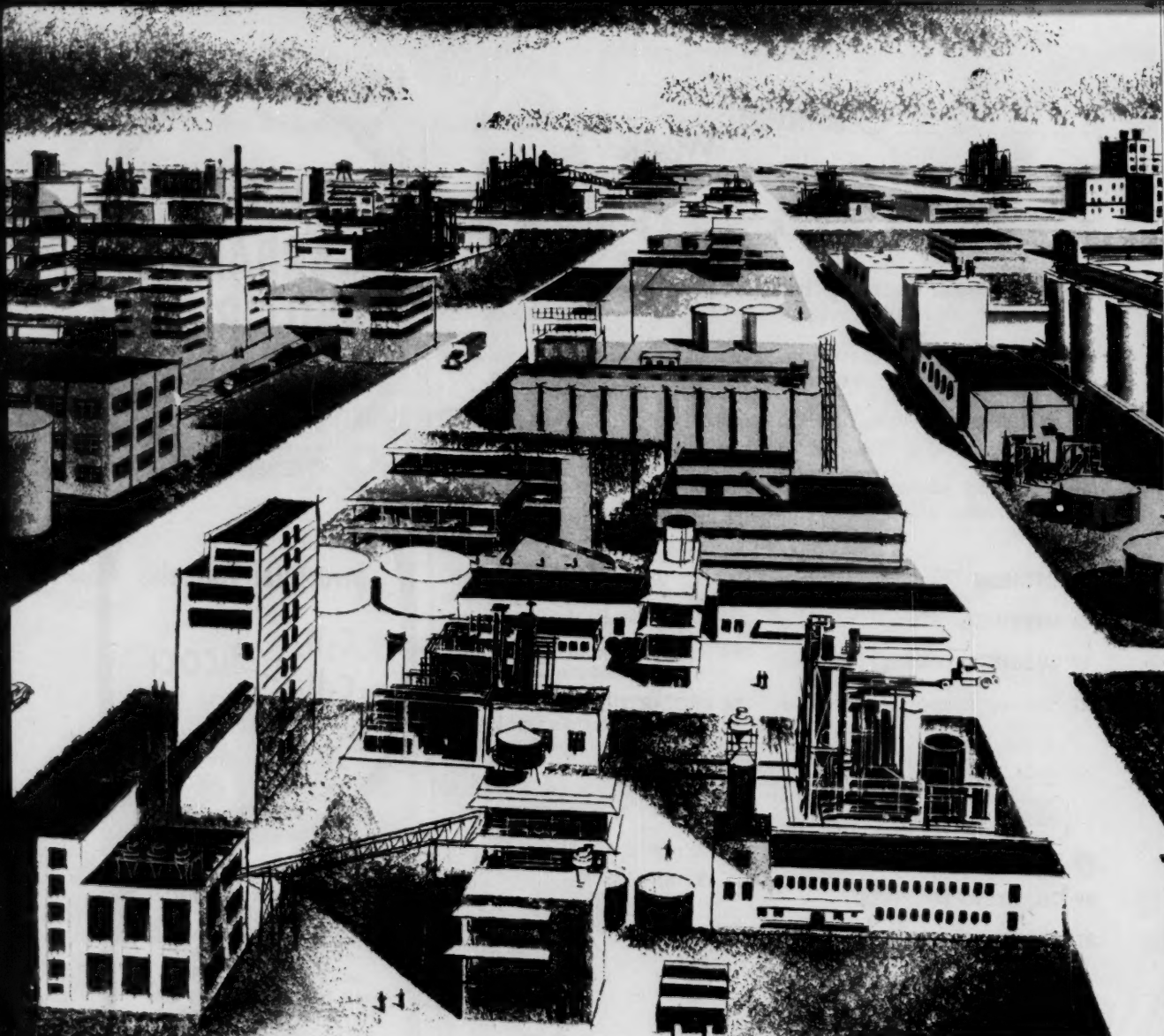
CABLE ADDRESS: PHARCHEM

Vol. 79

No. 16

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y. Printed in U.S.A. Second-class mail privileges authorized at Philadelphia, Pa. Copyright 1956 by McGraw-Hill Publishing Co., Inc. All rights reserved. Subscription: \$5.00/year in U.S.A., U.S. Possessions and Canada; \$15.00 in other Western Hemisphere countries; \$25.00 in all other countries.

THE BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES



A composite city of oil extraction plants by Blaw-Knox

If it were possible to assemble together in one location all the vegetable oil extraction facilities built by Blaw-Knox for clients throughout the United States, the result would be a veritable city of industrial plants.

The 35 plants engineered and constructed by Blaw-Knox have a combined annual capacity of more than 4,000,000 tons of seeds . . . equivalent to over 50% of the soybeans processed in the U. S.

Included among these installations are:

- The largest capacity SOYBEAN extractor in the world
- The largest capacity FLAX extractor in the world
- The largest capacity SESAME extractor in the world
- The largest capacity SAFFLOWER extractor in the world

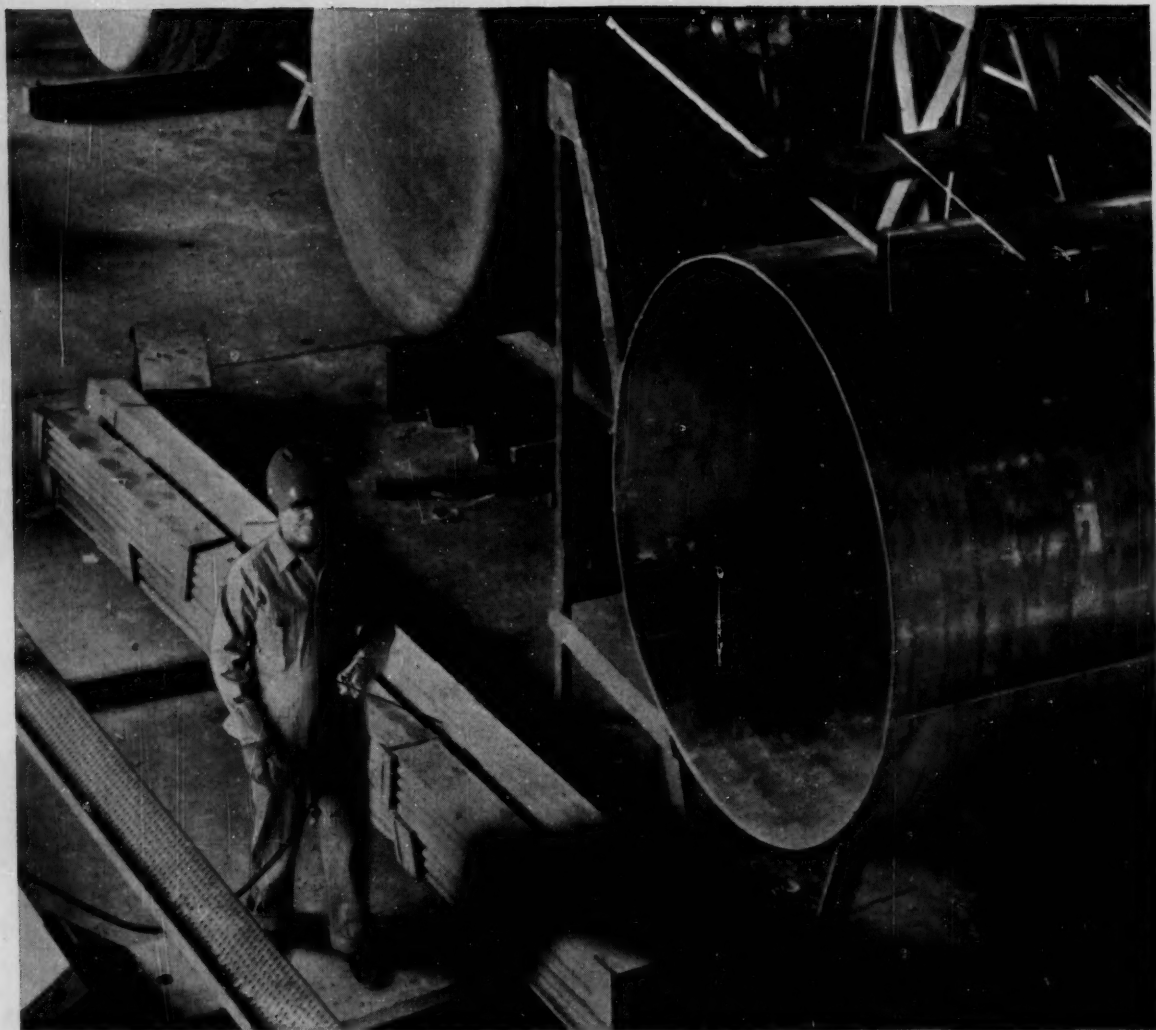
We welcome the opportunity to make recommendations of proper oil extraction and processing units to meet your requirements.



BLAW-KNOX COMPANY • Chemical Plants Division

Chicago 1, Ill. / Pittsburgh 30, Pa.

Birmingham • New York • Philadelphia • San Francisco • Washington, D.C.



"Preventive medicine for tank cars?"

Tank cars take terrific punishment. That's why, like all equipment, they require periodical inspection and repairs to render the best possible service. In 30 car repair shops, strategically located throughout the United States, GATX tank cars receive this care—inspection, steam-cleaning, lubrication, tank testing, painting and general maintenance. The purpose of this "preventive medicine" is to keep GATX cars in service for longer periods—to give you maximum benefits from your GATX lease.

This service is part of every GATX lease . . . a lease that provides shippers with the most dependable service available for bulk liquid transportation. When you lease cars from General American, you avoid the need for capital investment as well as operating, servicing, and maintenance problems.


If you'd like additional information concerning the advantages of a GATX lease, call or write your nearby General American District Office.

It Pays To Plan With General American



GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South LaSalle Street • Chicago 90, Illinois
Service Offices In Principal Cities
Service Plants Throughout The Country



geared to service

An important new source of supply and service is brought to the plastics industry when Escambia Chemical begins production of Polyvinyl Chloride Resins this year.

Products of highest quality and uniformity will be manufactured under constant technical supervision in Escambia's modern plant.

A well staffed and fully equipped customer and technical service laboratory is a major service offered by Escambia. Here, Escambia is conducting research on products and technical service problems for customers.

In its role as a dependable source of raw materials, Escambia is geared to make its contribution to the rapid progress of the plastics industry.

The first product—a general purpose, easy processing Polyvinyl Chloride Resin—will be in production this year for use in the calendering, extrusion and molding industries. Following this, Escambia will produce a molecular weight range of straight PVC Resins including types for electrical and rigid applications.



ESCAMBIA CHEMICAL
CORPORATION

261 MADISON AVENUE • NEW YORK 16, N. Y.

you
specify
 the catalyst—
HARSHAW
CAN
MAKE IT!

TABLETED

$\frac{1}{8}$ " $\frac{5}{32}$ " $\frac{3}{16}$ " $\frac{7}{32}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{5}{8}$ "

EXTRUDED

$\frac{1}{8}$ " $\frac{5}{32}$ " $\frac{3}{16}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{9}{32}$ "

SPHERICAL

$\frac{3}{16}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{3}{4}$ " 1"

GRANULAR

30-90 8-14 6-8 4-6 2-4

POWDERED

HARSHAW
 has the facilities for producing carload quantities of

PREFORMED CATALYSTS

to fit special process requirements

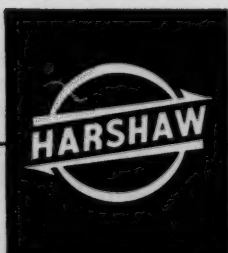
Hydroforming	Dehydration
Cyclization	Desulphurization
Oxidation	Alkylation
Dehydrogenation	Isomerization
Hydrogenation	

**CATALYTIC CHEMICALS
 SUPPLIED BY HARSHAW**

Aluminum Nitrate	Cobalt Nitrate
Copper Nitrate	Manganese Nitrate Solution
Metallic Soaps (Cobalt, Manganese)	
Nickel Carbonate	Nickel Formate
Nickel Sulfate	Sodium Methoxide
Nickel Nitrate	Zinc Nitrate

Our experienced technical staff will assist you in developing the best and most economical catalyst. If you have a catalytic process in the development or production stage, a discussion with us may prove beneficial.

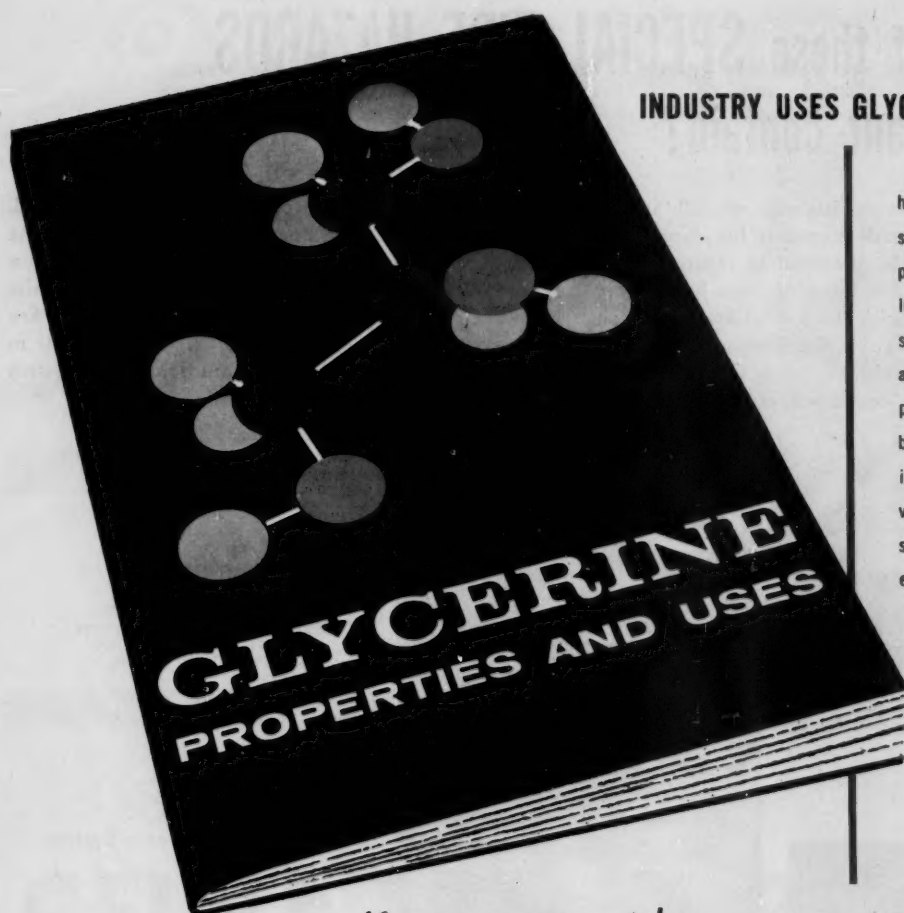
Write for **FREE Booklet, "HARSHAW CATALYSTS"**



THE HARSHAW CHEMICAL CO.

1945 EAST 97th STREET • CLEVELAND 6, OHIO

Chicago • Cincinnati • Cleveland • Hastings-On-Hudson, N.Y. • Houston • Los Angeles
 Detroit • Philadelphia • Pittsburgh



INDUSTRY USES GLYCERINE AS:

humectant
solvent
plasticizer
lubricant
sweetener
anti-freeze
preservative
bodying agent
intermediate
vehicle
softener
emollient

Keep pace with

one of industry's oldest and newest chemical products

For years Glycerine has been one of industry's most widely used commodities—with a versatility outclassing many so-called miracle products. Here is a practical guide to the properties that have made Glycerine so useful in the past and so important in much of today's technology.

This free booklet gives a description of Glycerine's physical, chemical and physiological properties, and its applications in such fields as pharmaceuticals, toilet goods, foods, cellophane and alkyd resins. In these and literally hundreds of other specialties, *nothing takes the place of Glycerine.*

For your free copy of this booklet, clip the coupon to your letterhead and mail to—

**Glycerine Producers'
Association**

Glycerine Producers' Association
295 Madison Ave., New York 17, N. Y.

©

CW

PLEASE SEND ME A FREE COPY OF "GLYCERINE PROPERTIES AND USES."

Name _____ Title _____

Company _____

Address _____







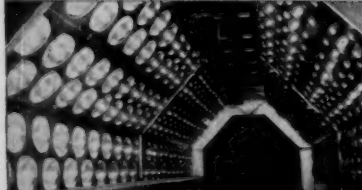

City _____ Zone _____ State _____

How many of these **SPECIAL FIRE HAZARDS** does your plant contain?

Practically every manufacturer has what we call "special fire hazards" — extra hazardous areas in his plant where special protection must be provided to insure against possibly serious loss by fire. Some of these hazards are illustrated below, along with the special fire protection systems recommended to arrest fire without delay. And there are many other hazards, too, where major or minor supplements to ordinary-hazard fire protection systems

are a positive "must" — if trouble is to be safely avoided.

Grinnell, with 87 years experience protecting against fire hazards of every description, has a fire protection system for every need. Moreover, the installation of the proper Grinnell System usually serves to reduce fire insurance premiums drastically, often pays for itself in a few years. Check your own hazardous areas against the list that follows:

SPECIAL FIRE HAZARD		RECOMMENDED SYSTEM
		WATER SPRAY Grinnell ProtectoSpray; Grinnell Mulsifyre Systems
Transformers	Propane tanks	
		FOAM Grinnell ProtectoFoam System
Bulk oil storage tanks	Flammable chemicals storage	
		CARBON DIOXIDE Grinnell CO ₂ System
Engine test cells	Dip tanks	
		DRY CHEMICALS Grinnell Dry Chemical System
Infrared driers	Flammable liquid pumping stations	

Call in a Grinnell Fire Protection Engineer. With a full range of equipment, you are assured of unbiased recommendations which will be fitted to your requirements. Grinnell Company, Inc., 288 West Exchange St., Providence, R. I.

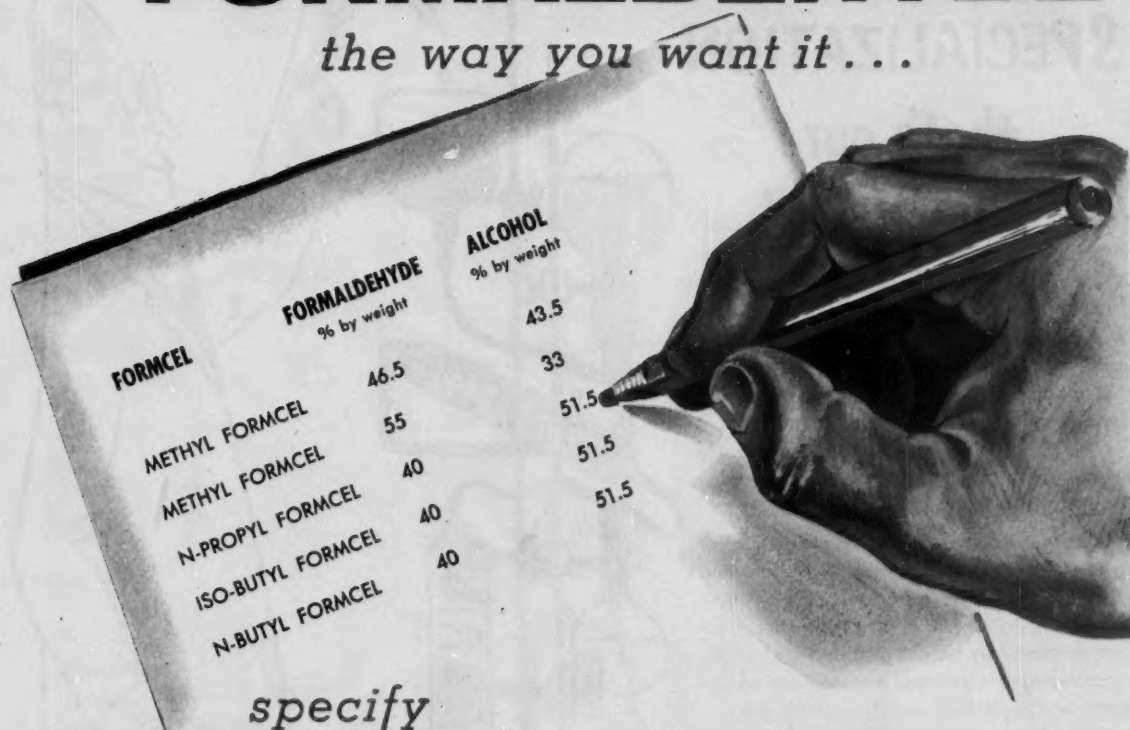
GRINNELL

WHENEVER FIRE PROTECTION IS INVOLVED



Manufacturing, Engineering, and Installation of Fire Protection Systems since 1870

for
FORMALDEHYDE
the way you want it...



FORMCEL	FORMALDEHYDE % by weight	ALCOHOL % by weight
METHYL FORMCEL	46.5	43.5
METHYL FORMCEL	55	33
N-PROPYL FORMCEL	40	51.5
ISO-BUTYL FORMCEL	40	51.5
N-BUTYL FORMCEL	40	51.5

specify

CELANESE FORMCELS

(Formaldehyde in alcohols)

Celanese Formcels are low water content formaldehyde solutions in a variety of alcohols. They are developed to meet specific processing requirements and, by replacing formalin, can often provide economic as well as quality advantages. The ratio of formaldehyde to water in Formcels is about ten times greater on a weight basis than 37% formalin.

Formcels form a continuous phase with most organic compounds... react faster than formalin because the formaldehyde is in more intimate

contact with the other reactants. Formcels do not require depolymerization, and, because they offer an alcohol medium in which all reactants are soluble, they contribute to faster reaction cycles.

Investigate Celanese Formcels: as organic chemical intermediates... for resin condensation reactions... for curing zein coatings... as an embalming fluid component. Mail coupon for Bulletin.

Celanese® Formcel®

Celanese Corporation of America, Chemical Division, Dept. 752-J,
 180 Madison Avenue, New York 16, N. Y.

Send me Product Bulletin S-23-5.

I am interested in Celanese Formcels for _____
 (type of application)

NAME _____
 TITLE _____
 COMPANY _____
 ADDRESS _____
 CITY _____ ZONE _____ STATE _____



In Canada: Canadian Chemical Co., Limited, Montreal, Toronto and Vancouver.
 Export Sales: Amcel Co., Inc. and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16, N. Y.

SPECIALIZATION

...that's our business!

When it comes to the production of white oils, petrolatums and petroleum sulfonates, we think that our more than fifty years of background with these products justifiably earns us the title of *specialist* . . . a specialist who can be of genuine help to you whenever problems arise concerning the use of these highly refined products.

While our regular line includes many different types and grades of white oils, petrolatums and sulfonates, we specialize in tailor-making these products to fit specific needs. No matter what your problem may be, if it relates to a white oil, a petrolatum or a sulfonate—chances are we can supply a product that's exactly right for you . . . and that will give your product *special* advantages.

L. SONNEBORN SONS, INC.
New York 10, N. Y.



White Oil, Petrolatum & Sulfonate Div.
L. SONNEBORN SONS, INC., Dept. CW10A
300 Fourth Avenue, New York 10, N. Y.

Gentlemen:

Will you please send me Technical Data on the following:

☐ White Mineral Oils ☐ Petrolatums ☐ Petroleum Sulfonates

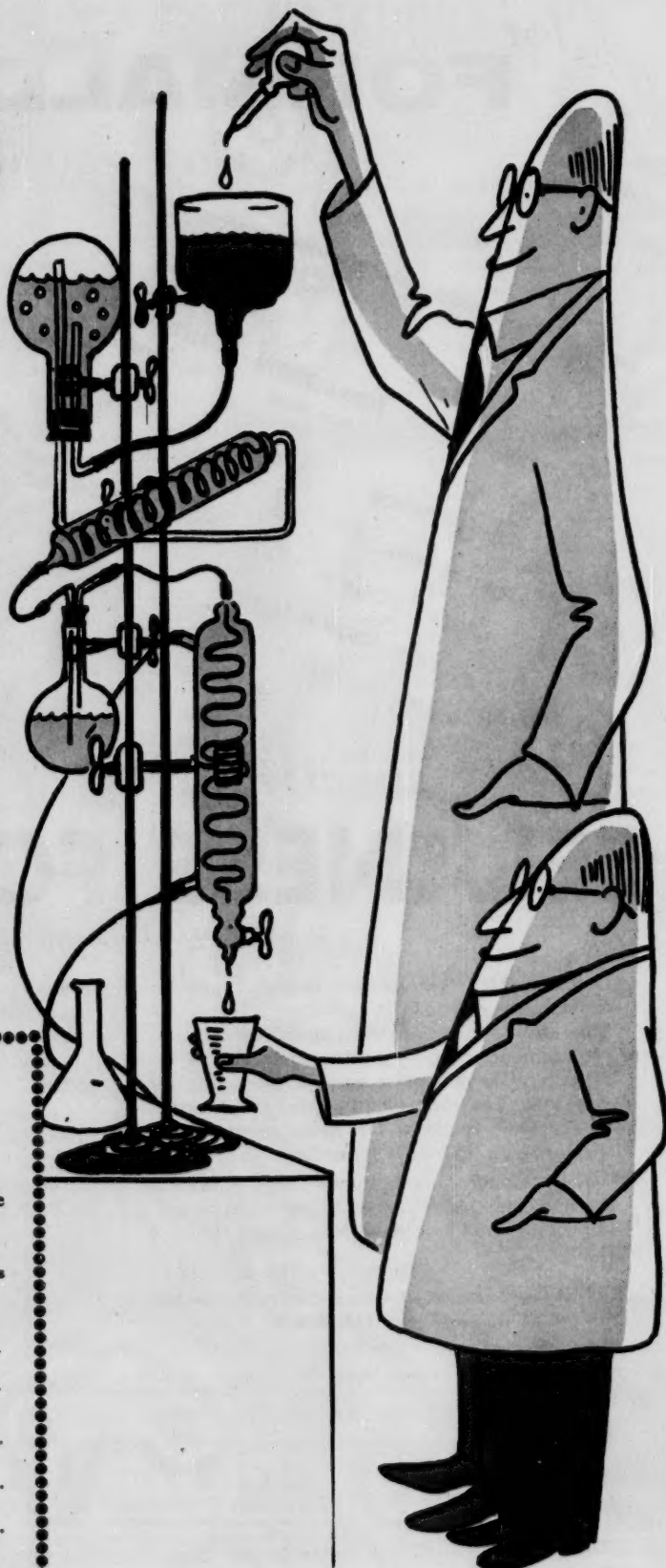
What can you do to help me solve this problem?

Name.....

Company.....

Address.....

City..... Zone..... State.....



it's
not
just
the

AMMONIA

...it's what goes with it!

*You get more than just ammonia
when you order from Allied. You get:*

ASSURED SUPPLY. Allied has 3 plants — at Hopewell, Va., South Point, Ohio and Omaha, Nebraska — all producing to the extremely high standards originally set for industry by Allied.

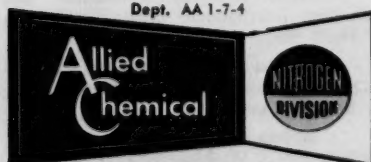
FAST DELIVERY — even on short notice. Each plant is located on water, key rail lines and highways in the heart of the heaviest consuming areas.

FINEST TECHNICAL SERVICE. Allied has an accumulation of ammonia know-how unequalled in the industry! Its technical service group can bring you the benefit of many years experience gained from participation in all types of production and research programs.

Do you have an ammonia problem — service, delivery, research? Write or phone us today.



Dept. AA 1-7-4



40 Rector Street, New York 6, N. Y.

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Tetroxide • Nitrogen Solutions • Fertilizers & Feed Supplements

IF YOU NEED A BETTER WAX FOR

emulsion polish
paste polish
no-rub polish
ink or carbon paper
leather dressing
electrotyping
rubber products
protective coating
packaging
laminating
impregnating
wax paper

GET ALL THE FACTS ABOUT BARECO WAX COMPANY PRODUCTS

BE SQUARE
PETROLITE
PETRONAUBA
STARWAX
CERAWELD
CERATAK
VICTORY
ULTRAFLEX

Bareco Wax Company
technicians are always available
to assist you with special wax
problems and applications.
If you have a wax problem,
call or write

BARECO WAX COMPANY

A Division of Petrolite Corporation
BOX 390, KILGORE, TEXAS
BOX 2009, TULSA, OKLAHOMA

SALES OFFICES:

NEW YORK, Chrysler Building
PHILADELPHIA, 121 S. Broad Street
CHICAGO, 332 S. Michigan Avenue

OPINION

Charge for Spraying

TO THE EDITOR: The item on page 46 of your Sept. 29 issue is of considerable interest to me. Particularly intriguing is the statement under the photograph, "Charging insecticides has been suggested before (*CW*, March 8, '52)" etc. It so happens that a patent was issued in my name about 15 years ago, and it covered rather fully the operation described in your article.

I conceived the idea of charging insecticides and parasiticide fogs while flying over the deciduous fruit area in the Pacific Northwest. In the matter of pest control with deciduous fruit it is essential to get early application of the first treatments. These must be applied before the buds break out. On the other hand, when application is made by the use of oil emulsions it is not possible to proceed until the danger of late frost has passed and until water is present in the irrigation ditches.

The thought occurred to me . . . that it should be possible to apply an electrostatic charge to the particles of oil and/or active chemical, direct the charged fog toward the naked trees and obtain complete coverage without much loss of active material.

The first experiments were performed in southern California, where a charged fog was sprayed toward a wide plank placed broadside toward the sprayer at a distance of about 30 ft. Filter papers were placed at appropriate points on the front and reverse side on the plank. A spray oil was employed for the production of fog. We were quite intrigued to learn that the filter papers on the far side of the plank absorbed as much oil spray as those on the near side.

Subsequent tests in orchards, both citrus and deciduous in type, demonstrated rather well the usefulness of this technique.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
H. C. E. Johnson, Chemical Week,
330 W. 42nd St., New York 36,
N.Y.

Since this early development, many other applications of the same principle have been employed—for example, the use of charged paint spray in order to assure the coverage of inaccessible parts of aircraft. . . .

H. E. BRAMSTON-COOK
Vice-President
Oronite Chemical Co.
New York

MEETINGS

Federation of Paint and Varnish Production Clubs, 34th annual meeting, Netherland Hilton Hotel, Cincinnati, Oct. 21-24.

American Coke and Coal Chemicals Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 22-23.

National Assn. of Corrosion Engineers, Gunter Hotel, San Antonio, Tex., Oct. 23-26.

American Society of Mechanical Engineers and the American Institute of Mining, Metallurgical and Petroleum Engineers, solid fuels conference, Sheraton Park Hotel, Washington, D.C., Oct. 25-26.

Swedish Plastics Federation, plastics exhibition and convention, Stockholm, Sweden, Oct. 27-Nov. 4.

American Council of Independent Laboratories, 29th annual meeting, Savoy Plaza Hotel, New York, Oct. 28-Nov. 1.

Commercial Chemical Development Assn., meeting on soaps and detergents, Netherland Hilton Hotel, Cincinnati, Nov. 1.

Scientific Apparatus Makers Assn., midyear meeting, The Homestead, Hot Springs, Va., Nov. 7-10.

Chemical Market Research Assn., theme: New Tools for Market Research, Harvard Business School, Cambridge, Mass., Nov. 13-14.

American Public Health Assn., 84th annual meeting, discussions of radioactive waste disposal, water resources policies, air pollution; Convention Hall, Atlantic City, N. J., Nov. 12-16.

American Chemical Society, Exposition of Chemical Industries, Cleveland Public Auditorium, Cleveland, Nov. 27-30.

Armour Research Foundation and others, International Ozone Conference, Hotel Sheraton, Chicago, Nov. 28-30.

American Institute of Chemical Engineering, annual meeting, Statler Hotel, Boston, Dec. 9-12.

American Nuclear Society, Sheraton Park Hotel, Washington, D.C., Dec. 10-12.



One of a kind!

Kids still love jackknives, but no longer seem to do much whittling. Like the circus big-top this vanishing pastime seems to be one more casualty of this high-G, triple-carburetion age.

The production engineer also has lost his enthusiasm for whittling metal. Machining from solid bar is still a necessity when making one part or a few prototypes. But, for hundreds of parts, extruded shapes save metal and machining time.

TMCA has pioneered the difficult art of extruding Titanium alloys. Many thousands of pounds of extruded Titanium sections are regularly shipped to jet engine and airframe industries. Seamless extruded tubing is another regular production item at TMCA.

Write today for information on Titanium extruded shapes and tubing.

... FIRST IN **Titanium**



TITANIUM METALS CORPORATION OF AMERICA, 233 Broadway, New York 7, N.Y.



The New Magic Ingredient for Polish!

A-C POLYETHYLENE almost magically upgrades all wax products. This low-molecular-weight polymer handles easily in the formulation of industrial waxes, furniture, floor and shoe polishes and many other wax products.

Add A-C POLYETHYLENE to your polishes for these extra advantages:

- Rugged traffic resistance
- High gloss
- Anti-slip finish
- Easy-to-restore luster
- Compatibility with all wax formulas
- Stable emulsions in all acid, neutral or alkali systems
- Lower mixing temperatures
- Stable prices and plentiful supply
- Economical cost
- Available in regular or emulsifiable grades

A-C* Polyethylene

*Trade-Mark

Try A-C POLYETHYLENE in *your* formula—the results are like magic . . . as your competitors are discovering. Write for information and samples today.

SEMET-SOLVAY PETROCHEMICAL DIVISION

Allied Chemical & Dye Corporation
Room No. 5822
40 Rector Street, New York 6, N. Y.



- ☐ Please send me free samples of A-C POLYETHYLENE.
☐ Please send me technical literature on A-C POLYETHYLENE.

NAME

COMPANY

ADDRESS

CITY ZONE STATE

Business Newsletter

CHEMICAL WEEK
October 20, 1956

There's a new tide of optimism being shown by chemical makers that may guide the industry over the pessimistic shoals of third-quarter earning reports.

Why are people optimistic? You can't pin it down too well with statistics—most of them are so long in the collecting that they're not very good indicators. But it's an upturn in the sales curve for products that have been listless sellers in past months.

It's come none too soon, either. For an industry that prides itself on always-increasing sales and on fair-to-substantial profit margins, the third-quarter figures—which saw the steel strike cut into over-all industrial activity—have been pretty bad.

Look at Allied Chemical's figures, out last Friday. Its sales (for the first nine months) were \$499 million, up 4%; but its net of \$35 million was down 11%. For the third quarter alone, compared with the same '55 months, sales were about constant at \$157 million, but net was down 26% to \$9.5 million.

Dow's Chemical's sales for the first three months of its fiscal year were \$151 million, up 18%, but its net for the quarter that ended Aug. 31 was \$11.3 million, down 4%.

Monsanto, reports President Charles Thomas, will show earnings "off a few cents a share" from '55, though sales are slightly higher.

Du Pont's sales for the nine months through September totaled \$1.393 billion, down 2%. Its sales for the quarter, \$465 million, were slightly below those in the second quarter, and 2% below the third quarter of '55. Total earnings per share were \$6 for the nine months, down 4% from the comparable period last year. Its nine-month operating revenues were \$4.09 a share, down 14%.

But as if to bolster investor confidence, Du Pont raised the curtain on a raft of new projects. It will build a plant at Waynesboro, Va., to produce 40 million lbs./year of Orlon acrylic staple; one at Circleville, O., to double its Mylar polyester film capacity; it plans a 30-million lbs./year boost in cellophane capacity (at Clinton, Iowa); it is doing engineering work on a new unit that would represent a 50% increase in metallic sodium capacity at Memphis, Tenn.

And Du Pont is not alone in expanding. Look at the plans of these other firms:

Jefferson Chemical plans a \$38-million expansion of its Port Neches, Tex., plant; it will produce chlorine, caustic soda, ethylene and ethylene oxide, among other materials. Formal announcement is expected within a month.

Business Newsletter

(Continued)

Mark down Jefferson Lake Sulphur, too, for chemical expansion. The firm—no relation to Jefferson Chemical—will spend \$2 million to expand production at its now wholly owned Merichem Co. subsidiary's plant at Houston. It will double present 150,000-gal./month cresylic acid-phenol capacity. It will quadruple, to 1,000 tons/month, its sodium sulfide production. Also planned by Jefferson Lake: a \$3.5-million petrochemical plant. It's looking for a site along the Houston Ship Channel.

A 30-tons/day ammonia unit will be built at Benson, Ariz., by Apache Powder Co. It thus joins Southwest Agrochemical in committing itself to Arizona fertilizer material production. Southwest hopes to have a 160-tons/day complex fertilizer plant operating next June, 60-tons/day units for both sulfuric acid and ammonium nitrate solutions, by October; and another 60-tons/day unit—for ammonia—by Jan. '58.

A new producer of nitrogen solutions in the Chicago area is about to begin production—it's the unit constructed by Sinclair and Standard Oil of Indiana. The unit, expected onstream any day now, will use purchased ammonia until an abuilding ammonia unit goes into operation several months from now.

There's expansion ahead, too, for uranium salts. Details are out this week on the plans three companies have to produce materials for the Atomic Energy Commission (*CW*, Sept. 13, p. 22). Highlights:

Koppers Co. and Kennecott Copper would build a plant to produce the entire amount of uranium salts wanted by AEC. (Current requirement estimate: 5,000 tons/year, but it may go slightly higher.) Cost of this plant, which may be built either in Paducah, Ky., or in Pueblo, Colo., could reach almost \$50 million

The Mallinckrodt-Climax Molybdenum proposal entails a \$22-million, 5,000-tons/year plant at Henderson, Ky.

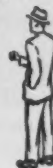
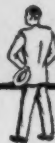
But the real surprise comes in the Vitro Corp. proposal. Vitro would build a \$5 million, 2,000-tons/year uranium tetrafluoride unit at Salt Lake City. Why the big disparity in plant cost? Vitro will use the Excer process (*see p. 87*), which it feels will allow it to effect considerable economies in construction and production.

Will Jack Knight's oil union ask higher wages from chemical companies? Not directly. While Oil, Chemical and Atomic Workers will ask "substantial" wage increases from oil firms, it plans no such chemical effort. But you can look for pressure in these ways (*see also p. 31*):

First, any chemical firm that's an oil company subsidiary can expect wage increase demands, as can any plant near refineries. Too, as time goes on, OCAW's chemical workers will want to be paid on the same terms as are its oil company members.

WHAT'S YOUR PROBLEM?

- In the food industry Is it lard improvement?
- In the glass industry Is it temperature control of glass molds?
- In the metallurgical industry Is it alloy modification? Is it titanium manufacture? Is it desulfurization?
- In the petroleum industry Is it stability improvement? Is it petro-chemicals manufacture?
- In the plastics industry Is it monomer manufacture? Is it polymerization catalysis?
- In the pharmaceutical industry Is it a synthesis where you can use sodium alcoholates?
- In the rubber industry Is it butadiene polymerization?
- In the textile industry Is it the synthesis of raw materials for synthetic fibers?
- In the detergent industry Is it the manufacture of fatty alcohols?
- In the dyestuffs industry Is it the synthesis of indigo or other dyestuffs?

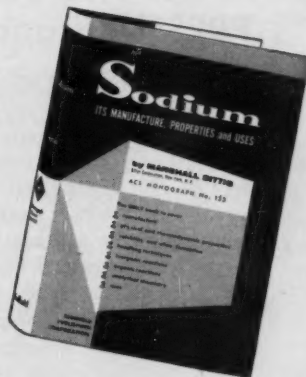


...THE ANSWER MAY BE IN THIS BOOK

Contains 150 illustrations, 2000 literature references.
May be purchased from REINHOLD PUBLISHING CORP.

430 Park Ave.
New York, N. Y.

and if you need sodium, call Ethyl
for rapid delivery in containers ranging from one-pound cans to 80,000
lb. tank cars. Bricks available in 1, 2½, 5, 12 & 24 lbs. packed in drums
(280-300 lbs. net wt.) Cast solid in non-returnable drums (425 lbs. net wt.)



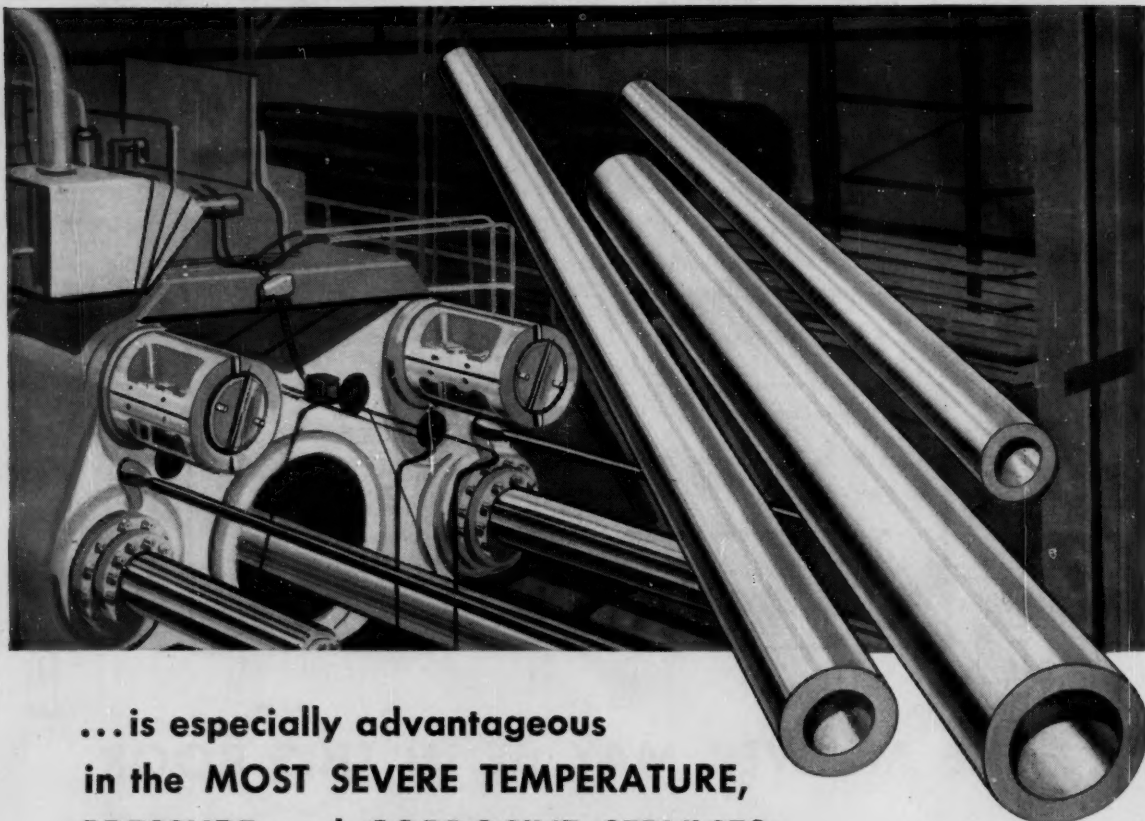
ETHYL CORPORATION
Chemicals for industry

100 PARK AVENUE, NEW YORK 17, N. Y.

ATLANTA, BATON ROUGE, CHICAGO, DALLAS, DAYTON, DENVER, DETROIT, HOUSTON,
KANSAS CITY, LOS ANGELES, NEW ORLEANS, PHILADELPHIA, PITTSBURGH, SALT LAKE CITY,
SAN FRANCISCO, SEATTLE, TULSA, MEXICO CITY & (ETHYL CORP. OF CANADA LTD.), TORONTO

HIGH INTEGRITY EXTRUDED ALLOY STEEL PIPE

available from 4" to 22" O.D. in practically any wall thickness



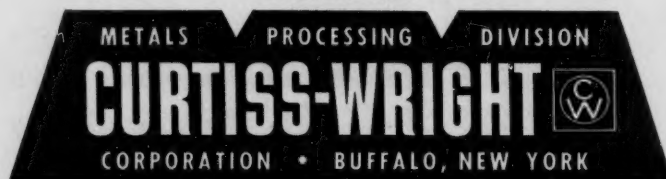
**...is especially advantageous
in the MOST SEVERE TEMPERATURE,
PRESSURE and CORROSIVE SERVICES**

A specially-built 12,000 ton extrusion press — capable of processing any of the stainless or other ferrous alloys — imparts vastly improved mechanical properties to new Curtiss-Wright **HIGH INTEGRITY** pipe. *High ductility with high strength and higher resistance to stress at high temperature* are automatically built into even the largest diameters and thickest-wall products. In the larger diameters, 10" and above, the economics of **HIGH INTEGRITY** pipe are particularly attractive.

Major economies are regularly effected in fabrication and installation . . . using the longer units — up to 50 feet. Ultrasonic testing of all **HIGH INTEGRITY** pipe — combined with the more conventional test methods — assures uniform, dependable, specification quality of delivered product.

Curtiss-Wright's Metals Processing Division maintains qualified engineering personnel at all branch offices, available for design consultation and specification pricing.

79 GRIDER STREET



METALS PROCESSING DIVISION BRANCH OFFICES: NEW YORK • HOUSTON • LOS ANGELES

HOW SMALL BUSINESS IS FARING

	1954 Number of Plants with 1-19 Employees	20-99 Employees	100 and over Employees	Total	Total Employees
Chemicals, allied products	7,436 up 18%	2,791 up 2%	1,194 up 14%	11,421 up 13%	745,695 up 18%
Pulp, paper, allied products	1,832 up 47%	1,738 up 6%	1,415 up 17%	4,985 up 21%	528,853 up 18%
Petroleum, coal products	761 up 13%	326 down 9%	356 up 7%	1,443 up 4%	216,378 up 2%
Glass, stone, clay products	7,889 down 9%	2,308 up 16%	1,035 up 11%	11,232 down 10%	492,985 up 7%
Rubber products	772 up 99%	343 up 42%	311 up 26%	1,426 up 63%	248,367 down 10%

Source: 1954 Census of Manufactures. Percentages show change from 1947 census.

Small Business Finds a New Money Source

Businessmen who go to regional offices of the government's Small Business Administration to ask for loans are finding that there is lots less red tape than ever before. Via a move that may, or may not, have been made with an eye to the Nov. 6 balloting, SBA this week gave regional men much broader powers over loans made jointly by the agency and local banks.

For the 20,000-plus* chemical process firms that may fall in the small business category, this move is significant—especially in a time like this when money is hard to get and expensive to keep. It marks an indication that top Administration policymakers now feel that credit desired by small businessmen is a small enough part of the entire money supply, that they can encourage such loans without loosening the anti-inflation curbs on money supplies in general.

Certainly, compared with the total amount that chemical companies plan to spend on expansion this year—some \$1.5 billion—and the \$6.6 billion to be spent by the industrial groups listed above, the amount of

loans to small business, for capital spending or for other purposes, is small.

Since SBA's founding in 1953, through the end of September, some 222 companies that produce chemicals and allied products asked SBA for loans totaling \$16.5 million, 2% of the total applied for. SBA, in a special report prepared for *CW*, says it has approved 69 loans totaling \$4.4 million (1.6% of all loans granted), again through Sept. 30.

How big are the loans SBA makes to chemical companies? They average \$64,000, well above the over-all mean of \$50,000. And while, for industry in general, SBA is granting approval to a bigger number of smaller loans, the chemical industry is bucking the trend. Here, fewer firms are asking for larger sums. (Figures for all of the chemical process industries are not available.)

Who Can Apply: The definition of what is small business is somewhat flexible. In general, you can say that all companies that employ 250 or less are small business; but no firm with more than 1,000 workers is. The upper limit on what is small business varies. It's 1,000 for companies that make such products as medicinals, soap and glycerine, plastics, organic chemicals,

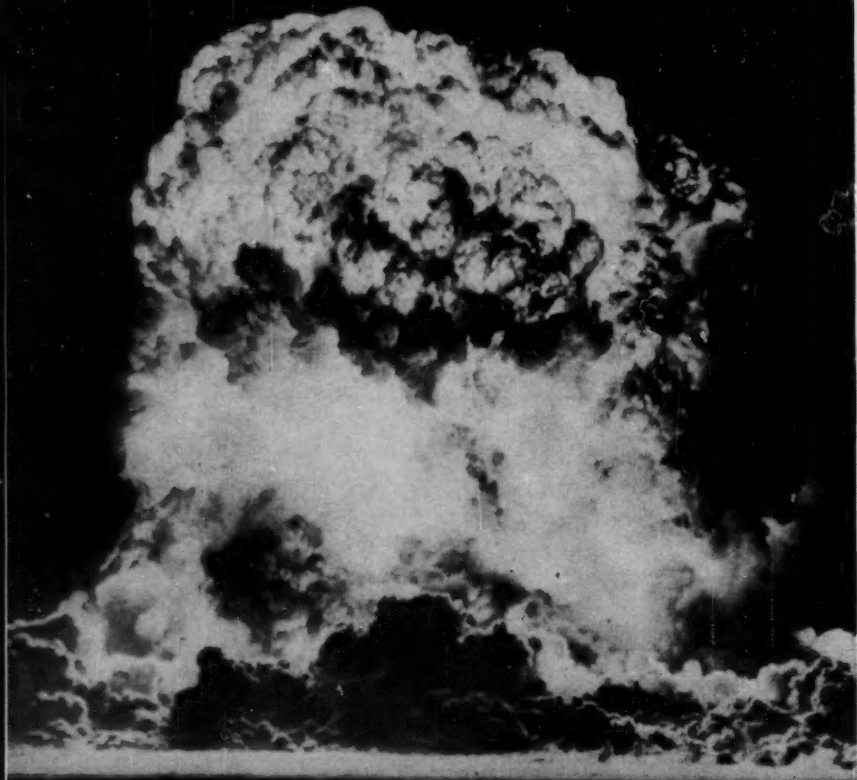
chlorine and alkalis, and synthetic fibers. On the other hand, the limit is 250 for firms that make glue and gelatin, paints and varnishes, cleaning and polishing materials, insecticides or toilet goods.

Push for Promotion: Whatever the specific size limit for a business eligible for an SBA loan, many more firms that meet the qualifications are now applying for loans. The total, in fact, is so great that SBA has been caught short of personnel and equipment, borrows to meet its needs.

Why the flood of applications? To some extent it represents requests from businessmen who have been turned down this year by banks that could handle their applications a year ago. Other businessmen are finding out about SBA for the first time.

How long will SBA loans stay high? Conceivably for many years—as long as the nation's over-all capital spending program stays high. But those within the Administration—primarily in the Treasury and Federal Reserve—who have opposed special credit terms for small business all along may find more receptive ears for their arguments, once the heat of the current political campaign has died down.

* Figures in the table above, just released by the Census Bureau, indicate that there are 26,196 plant "establishments" with less than 100 employees. But the technical term, establishment, includes every separate manufacturing unit, whether or not it is independently owned.



THE 'TEAPOT' EXPLOSION: From its test results, hints on . . .

Living with the A-Bomb

Man's food supplies, the chemicals used in processing them, and the plastic films and other materials in which they're packaged will survive an atom bomb blast in far better shape than man himself.

This is the gist of a long-classified report on field results of Operation Teapot—a cooperative atomic bomb test run by the Atomic Energy Commission at its Nevada test site with the help of several federal agencies and industry groups in the spring of 1955. The data has just been declassified.

Some 15,000 tons of foods—treated with various chemicals and packed in many kinds of containers—were placed within and at the fringe of the area of "total physical destruction" from the explosion of an atom bomb equal to 30,000-35,000 tons of TNT. (Such a blast is about 50% more powerful than the bomb dropped on Hiroshima.) Food products wrapped and stored as they would be in normal commercial use were placed at exposure stations ranging from 1,050 to 15,000 ft. from the bomb.

Most of the food was placed in

thinly covered shallow slit trenches one-quarter to one-half mile from where the bomb was detonated. Previous A-bomb blasts had shown that neither man nor buildings (except those made of steel or of concrete heavily reinforced with steel) could survive so powerful an explosion.

The products subjected to the nuclear explosion have since been exhaustively studied by industry and government scientists for a variety of effects—physical damage, harmful irradiation, vitamin loss, texture and flavor changes. The findings: Physical damage was about as expected under such heavy blast pressures—but irradiation was a good deal less than anticipated, with scarcely any foods rendered permanently unsafe for human consumption. Similarly, vitamin loss and other chemical changes were of minor significance.

Here are the highlights of Operation Teapot, as presented by Edwin P. Laug, Food & Drug Administration's physiochemistry chief, at this week's 70th annual meeting of the Assn. of Official Agricultural Chemists:

- Physical damage was most severe

for soft-packed or unpacked bulk foods laid in shallow slit trenches close to the bomb, protected by a 2-in. layer of loose soil or wood board. Plastic film bags in which such foods were packed did not burst—although some polyethylene bags were torn. None of the plastic materials became discolored, nor did any of the films weaken under the bomb impact. Metal cans stood up well under the blast—in slit trenches or stacked along shelves in frame buildings—a mile or so away.

- All types of containers absorbed some neutrons—except for polyethylene film, which showed no such irradiation. Mylar polyester film became mildly radioactive; Pliofilm, cellophane and saran-coated cellophane showed higher radiation levels. None of the plastics showed a high radiation level like that of glass bottles. (The bottles quickly dissipated their neutrons, however.) Moderate levels were shown by tin cans.

- While all food became "more or less radioactive," no irradiation was transmitted to the food by the container. Bottled soft drinks, for example, could be safely consumed immediately after the explosion—although the bottles holding them were still highly radioactive. Likewise, produce in polyethylene bags became radioactive, although the bags did not.

- Causes of radioactivity in containers varied. The higher readings obtained from Pliofilm, cellophane and saran-cellophane were probably caused by mineral plasticizers used in these films. (Such plasticizers often contain tin, which readily absorbs neutrons.) Likewise, the high but rapidly dissipating radiation in glass bottles was traced to the sodium in the glass.

- Metal cans remained radioactive for many months. Their radioactivity is linked, not to the iron can, but to the tin used in coatings (the isotope produced in such an irradiation has a half-life of 100 days). Most notable radioactivity in cans was observed in those lined with "CC" enamels—lacquers that contain zinc to combine with sulfur in canned food in order to prevent discoloration of the liner. Both zinc and sulfur form long-lived isotopes; the zinc isotope has a half-life of 250 days.

- Foods were invariably less radioactive in their natural state than when they contained processing chemicals—particularly salt. Salt itself, after ex-

posure to an A-bomb's neutrons, is likely to contain some permanent radioactivity (but not enough to cause illness) and also become yellow. Phosphorus-containing foods showed the highest radioactivity levels—levels high and long-lived enough to make consumption of such neutron-affected products unwise except in an emergency.

• Vitamin loss was minimal in most products. The loss was significantly less in those foods that normally provide the best source of the particular vitamin. Flavor and texture changes were often similar to those observed in foods subjected to gamma rays in research on radiation sterilization. But the taste changes from neutrons absorbed by the foods were slight—scarcely detectable by expert tasters.

No 'Fallout' Test: Radioactive "fallout"—the dust cloud of radioactive materials that results from nuclear weapon explosions—did not figure in Operation Teapot's food-test experiment. The cloud came down to earth many miles from the test site.

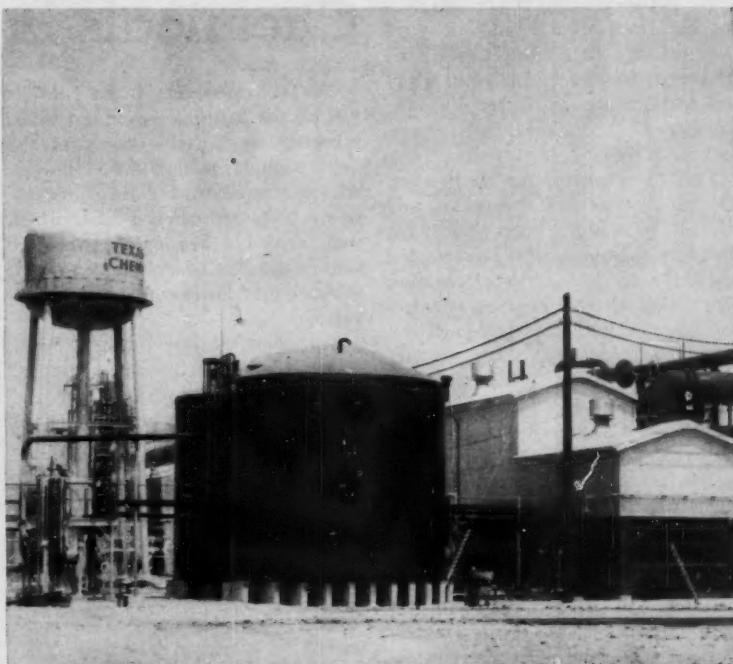
The effects of fallout on food supplies, therefore, remain unmeasured, and, judging from the findings of Operation Teapot, are probably of more serious dimensions than the effects of a nearby atom blast.

More Delay for GAF

A decision handed down by the federal district court in Washington last week will mean further delays in General Aniline & Film's plan to reclassify its stock.

A temporary injunction granted by Judge David A. Pine prohibits the government from voting its stock on the question of a reclassification plan that would have facilitated sale of GAF stock. Since the government owns 97% of the company, which it seized in 1942 under the trading-with-the-enemy act, any reclassification plan is, for the time being, impossible.

The injunction is a temporary victory for the Swiss holding company Interhandel and certain of its stockholders. Interhandel claims that it wasn't enemy-controlled during the war years and that the U.S. had no right to seize the stock. Interhandel has been in court since '48, attempting to regain its holdings.



TEXAS CITY PLANT: Will the name on the water tank be changed?

New Face in Texas City?

The stormy and ill-fated career of Texas City Chemicals, Inc., seems nearer to an end this week.

A U.S. district court in Texas agreed to look over the just-submitted plans (*CW Business Newsletter*, Oct. 13) for refinancing the company. The planner: Smith-Douglass Co., of Norfolk, Va., one of the East Coast's biggest fertilizer makers.

Already, S-D personnel are cleaning the cobwebs from Texas City's dicalcium phosphate plant in Texas, shut down since early this year (*CW*, March 20, p. 17, *et priori*). As agent for the court's trustee, S-D is now reopening the plant for operation.

S-D's Coronet Phosphate Co. division, which now produces defluorinated dicalcium phosphate at Plant City, Fla., and which owns substantial phosphate rock reserves in that state, will begin shipment of feed-grade calcium diphosphate to feed manufacturers in the West and Midwest early in 1957. Such a move would extend the area in which Coronet competes.

S-D, through its plan, hopes to become the major stockholder in the bankrupt company.

But before making a decision on S-D's plan, the court requested that any other prospective buyer submit its own reorganization plan. It has set a deadline of Nov. 26 for such submissions.

Deeper into Chemicals: S-D President Ralph Douglass says acquisition of Texas City Chemical would thrust his company deeper into the feed-and-heavy-chemicals trade. Too, it would "offer opportunities for other developments not in fertilizer lines."

Presumably, S-D is interested in carrying out diversification plans such as those once considered by TCC—to branch from dicalcium phosphate into diammonium phosphate, sodium fluoride and synthetic cryolite.

New Money: S-D's plan for refinancing, informed sources report, calls for it to put a minimum of \$1 million into the new organization. Of this, \$500,000 would go toward the purchase of a new series of debentures, junior in claim on company assets only to a proposed new mortgage. Another \$500,000 would be used by S-D to purchase 85% of a new 400,000-share common stock issue.

As it stands now, TCC's outstanding debt includes a \$3-million mortgage held by the First National Bank of Dallas, secured by the plant facilities and further guaranteed by TCC founders W. L. Pickens, R. L. Wheelock and H. H. Coffield.

Too, the company has outstanding \$3 million worth of debentures, and \$1,321,736 in junior notes held by the founders. Common stock outstanding includes over 750,000 no-par common shares held by the founding trio and another 300,000 shares owned by debenture holders. This stock would be recalled.

The plan before the court reputedly says that two insurance companies are prepared to loan TCC some \$2.3 million in return for new mortgages on its plant. Further, the plan is said to propose that the founders put up an additional \$700,000, which, with the insurance firms' money, would meet the total of \$3 million owed the Dallas bank. For cancellation of the \$1,321,736 in notes, the founders would receive 20,000 shares of new \$1-par common stock.

Creditors, who hold the \$3 million worth of debentures, would reportedly receive some 33¢ on the dollar. (At the outset, Texas City debentures and stock were marketed as a package: \$100 worth of debentures and 10 shares of no-par common sold for \$107. Currently, the debentures are selling for about \$16.)

Replacing the 300,000 shares of stock originally sold to debenture holders would be 40,000 new shares of common. S-D would own the remaining 340,000 of the 400,000 new equity shares.

Still More Problems: There are still matters to be ironed out. Some creditors have already tentatively agreed to the plan. But there's debate over some disposition of the \$1,321,736 in notes still owned by the founders. The latter question the plan's contention that these can be canceled under a previous agreement by them to supply certain amounts of working capital. Moreover, Texas City's outside stock and debenture holders have yet to be polled on the reorganization.

At any rate, steps are being taken to try to revive Texas City. If no alternative to S-D's plan is submitted before the court's Nov. 26 deadline, Smith-Douglass may well be on its way to newer and broader operations.

Chemicals in Court

The U.S. Supreme Court held its first official business session last week, accepting or rejecting many of the cases pending on its 1956-57 docket. All told, the court gave first consideration to over 300 cases, most of which were denied a hearing. (A Supreme Court refusal to hear a case, in effect, affirms the lower-court ruling involved.)

The court, already facing a heavy workload of labor cases, accepted even more cases for argument and decision later this term. In one of these, the court granted Olin Mathieson Chemical Co. a review of a lower-court ruling—which upheld the National Labor Relations Board—that Olin violated the Taft-Hartley law by changing its seniority policy to give preference to nonstrikers and to employees who had returned to work during an unsuccessful strike. Olin argues that its change of policy was a lawful means of protecting its business.

The court also agreed to rule on three cases which involve an issue important to every employer who deals with a union: whether federal district courts have jurisdiction to compel employers to comply with an arbitration clause in collective bargaining contracts. Unions won two of the three cases in lower courts.

Aerosol Airing: Among the cases the court turned down last week was Colgate-Palmolive's attempt to upset decisions that it infringed a Carter Products patent on aerosol shaving cream. Denial of the Colgate petition means that Carter's patent validly covers the use of all pressurized packaging by the soap industry.

Also turned down: a case attacking the constitutionality of provisions of the Federal Food, Drug and Cosmetic Act that penalize intrastate sale of dangerous drugs without prescription, and a petition seeking reversal of a Massachusetts supreme court ruling that public interest in discussion of cancer and the constitutional protection of a free press outweigh the right of the Krebiozen Research Foundation to an injunction against publication of a book allegedly attacking Krebiozen as a cancer drug.

The court acted, too, on the long-smoldering fight between the federal

government and the state of Louisiana over the location of Louisiana's offshore boundary in the rich oil and sulfur areas of the Gulf of Mexico. The court rejected Attorney General Brownell's motion to declare the government "winner by default" and the state's motion to dismiss the government's complaint. Brownell had argued that, since Louisiana had not answered his complaint within an allotted, 90-day period, the court should rule in favor of the government's claim that the state boundary is only 3½ miles offshore, not 10½-38 miles out, as claimed by Louisiana.

The court, well aware of the emotion involved in this legal dispute, refused to accept either party's drastic proposal. Instead, it bluntly directed the state to file its answer on the merits of the case within another 30 days.

EXPANSION

Phthalonitrile: Allied Chemical & Dye Corp. will build facilities for "large-scale commercial production" of phthalonitrile at Edgewater, N. J. Construction is expected to be finished by next summer.

Gypsum Products: National Gypsum Co. will build a \$6-million gypsum processing plant at Lorain, O., subject to municipal approval.

Synthetic Rubber: American Synthetic Rubber Co. will expand its Louisville, Ky., GR-S synthetic rubber plant 50%, with addition of reactor, recovery and finishing facilities. It's scheduled for completion by Jan. '57. Cost: \$3 million.

Uranium: Utah Construction Co. will build a \$10-million uranium ore processing mill in the Gas Hills district of Fremont County, Wyoming. The firm has exercised its option to buy 60% control of Lucky Me Uranium Co., which made the original ore discovery there.

Fertilizer: Re-Mark Chemical Co. will spend \$100,000 to expand its recently purchased \$125,000 fertilizer plant in Goulds, Fla. Re-Mark is the first chemical venture under-

Washington Angles »

» **Hal Johnson, 41**, director of development in Monsanto's Research and Engineering Dept., is slated to be the next industry man to spend six months as director of the Chemical & Rubber Division in the Commerce Dept.'s Business & Defense Services Administration, industry sources insist.

He would replace Diamond Alkali's U. T. Greene next January.

» **Was the Southern fertilizer industry hurt** when the U.S. minimum wage went up from 75¢ to \$1 last March? Labor Dept. experts have studied the question, will soon publish their report.

This rise, they told CW, is having half again as much impact as did the 1950 minimum wage hike from 40¢ to 75¢.

A further boost in the minimum (to \$1.25/hour) is unlikely next year, despite union leaders' demands. The Administration wants to broaden first the coverage of such a minimum.

» **Secret facts on atomic power plants** may come out into the open for the first time next month, when the Atomic Energy Commission holds its first public hearing on construction of a new-design "fast-breeder" power reactor. Up to now, AEC has held no public hearings before granting nuclear power plant construction permits.

The November hearings will review whether the fast-breeder reactor (which produces more fuel than it consumes) can be operated safely. A group of private power firms led by Detroit Edison plan to build such a reactor near Detroit and have already received—in private—an AEC go-ahead for construction. This approval will be reviewed in public, on behest of three labor unions, which feel that the reactor's safety features have yet to be proved.

» **Subsidy programs for mineral miners** are getting started, now that the election is approaching. General Services Administration has begun to buy acid-grade fluorspar, asbestos, and columbium-tantalum ores under a stop-gap program that will last through 1958. By then, Interior Dept. is expected to have recommended to Congress a long-term program to help such miners.

Fluorspar producers, now that this program is beginning, are expected to withdraw their request that the Office of Defense Mobilization bar imports that were hurting domestic producers.

» **When must federal inspectors be admitted** to plants making foods, drugs, devices or cosmetics? "At reasonable times," says the statute. But some industrialists expect to seek a legal interpretation soon.

Why? Conceivably, a plant manager might refer a food and drug inspector's request for entry to his management—and, perhaps, not let the inspector in for several days.

taken by multimillionaire financier Arthur Vining Davis (CW, July 7, p. 20).

•
Methyl Bromide: Kolker Chemical Corp. will double its methyl bromide capacity with expansion of its Newark, N.J., plant. Cost and capacity of the program are undisclosed.

COMPANIES

Petrocarbon Chemicals, Inc., stock can no longer be traded on the San Francisco Stock Exchange, under a Securities & Exchange Commission ruling, pending the California Corporation Commission's approval of a plan to transfer the company's corporate charter to Maryland.

•
Consolidated Mining & Smelting has purchased a U.S.-owned heavy-water plant in Trail, B.C., which the company operated for the U.S. government during World War II. Terms of the transaction were not disclosed;

the plant was built in 1942 at a reported cost of \$2.8 million. The company is expected to discontinue manufacture of heavy water but will continue to make hydrogen.

•
Sun Chemical Corp. stockholders have voted to increase the firm's authorized common stock from 1.6 million to 2.5 million shares. The company currently has 1,196,283 common shares outstanding.

•
Shawinigan Chemical Ltd. has sold \$5 million worth of 4¾% sinking fund bonds to institutional investors. The bonds, due in 1976, will aid in financing a \$5-million caustic soda and chlorine plant and a \$750,000 sulfuric acid unit now under construction.

•
Great Western Chemical Co. has consummated a merger agreement with the industrial chemical division of Wall-Western, Inc., a forest products firm operating in Oregon.

FOREIGN

•
Styrene/France: The French firm Houilleres dh Bassin de Lorraine is now blueprinting a styrene monomer plant based on processes and know-how supplied by Koppers Co. (Pittsburgh). Societe Belge de L'Azote will engineer the project.

•
Ethylene Oxide/Germany: Farbenfabriken Bayer (Leverkusen) will build a 26-million-lbs./year ethylene oxide plant at Leverkusen. Scientific Design (New York) will engineer the project. Ethylene feed will come from a crude-oil cracking plant to be built on the same site.

•
Polyethylene/Scotland: British Hydrocarbon Chemicals Ltd., jointly owned by Distillers Co. and British Petroleum Co., plans to build a 25-million-lbs./year polyethylene plant at Grangemouth, Scotland. The plant has been licensed to use the Phillips process.

BETTER DISTRIBUTION METHODS



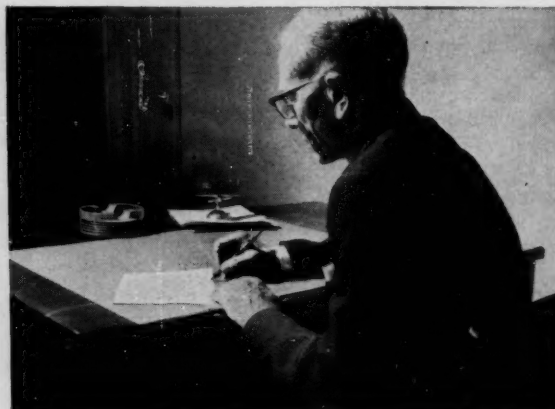
14 SEPARATE REQUISITIONS for assorted chemicals come in to New York office of national manufacturer. Purchasing agent has single order made out and calls nearby Merchants office.



ENTIRE ORDER IS PUT ON TELETYPE to Merchants offices and warehouses across the country. Each of Merchants' other offices is similarly equipped to function as central ordering point.



DELIVERIES GO OUT IMMEDIATELY to all 14 plants. Each plant has its order filled from nearby Merchants warehouse; short haul delivery saves time and shipping costs.



SINGLE INVOICE FROM MERCHANTS covers all 14 shipments. By calling Merchants, this purchasing agent supplies the chemical needs of all his plants quickly and economically from a single, reliable source!

NATIONAL MANUFACTURER MAKES ONE CALL TO MERCHANTS, GETS LOCAL DELIVERY TO 14 PLANTS ACROSS THE COUNTRY!

Each Merchants office is geared to supply fast, efficient delivery of industrial chemicals from warehouses throughout the country. Each Merchants office provides all the advantages of nationwide service with all the economy of local delivery. A single call to Merchants saves you

time, reduces your shipping costs, and simplifies to a considerable extent your order and invoice paperwork. Products include acids, alkalis, fungicides, surfactants, chlorinated solvents, emulsifiers, laundry compounds, soaps, dry ice and chemical specialties.



MERCHANTS CHEMICAL COMPANY, INC.

60 East 42nd Street, New York 17, N. Y.

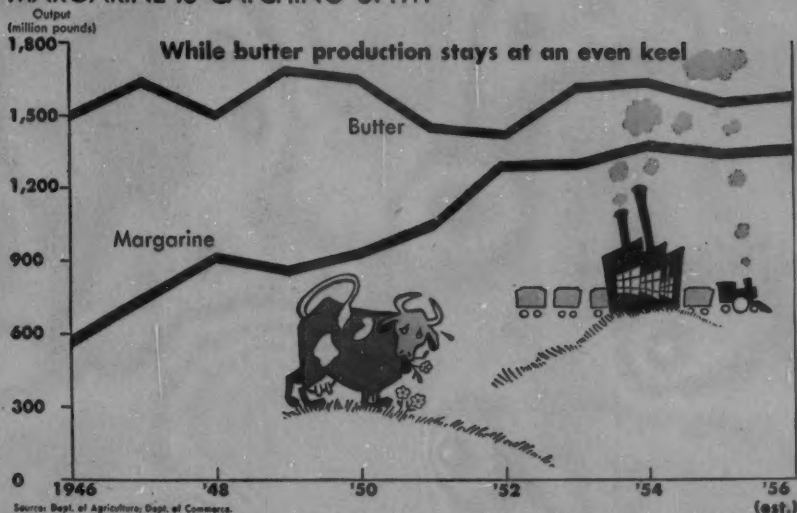
SALES OFFICES AND WAREHOUSES: Chicago • Cincinnati • Denver • Louisville • Milwaukee • Minneapolis • New York • Omaha

STOCK POINTS: Albuquerque, N. M. • Erwin, Tenn. • S. Norwalk, Conn. • Columbus, Ohio

Charting Business

CHEMICAL WEEK
October 20, 1956

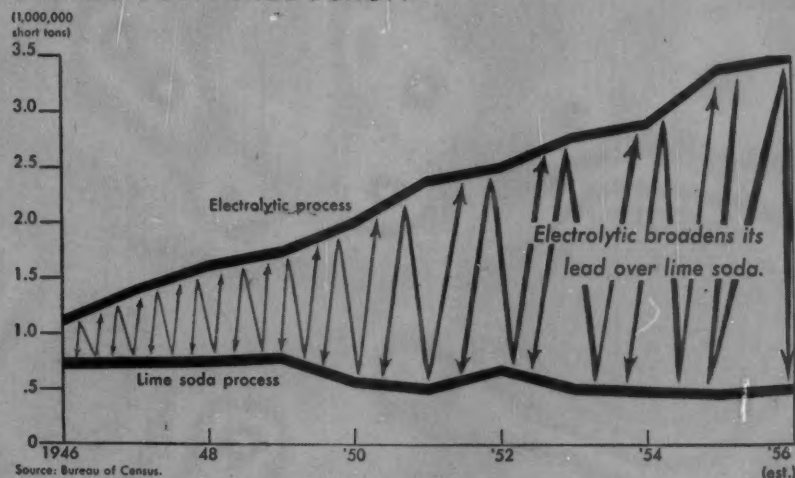
MARGARINE IS CATCHING UP....



THE COW has good reason to look discontented. Why? Man-made margarine—butter's competitor in the bread-spread business—has scored a healthy 130% production gain in a decade; and this gain is reflected in sales of many chemicals.

For example, included in margarine manufacture in '56 were: over 1 billion lbs. of fats and oils, 34 million lbs. of sodium chloride, 2.5 million lbs. of lecithin, 1 million lbs. of sodium benzoate, 0.3 million lbs. of coloring agents, 22 million USP units of vitamins A and D.

CAUSTIC SODA PRODUCTION



WITH caustic soda passing the 4-million-ton production mark, an "outmoded" process still manages to kick in 12% of the total. Prior to World War I, the lime soda process was the important production method for sodium hydroxide. But as demand for chlorine increased,

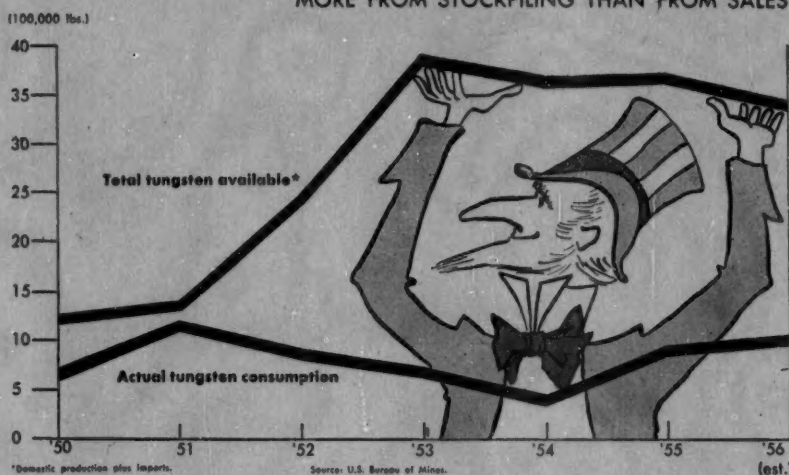
the electrolytic method for caustic soda, which produces chlorine as a coproduct, gained in importance. Reason why the lime soda process still hangs on: favorable locations of its factories, low production expenses and high quality of product.

Charting Business

(Continued)

U. S. TUNGSTEN SUPPORT:

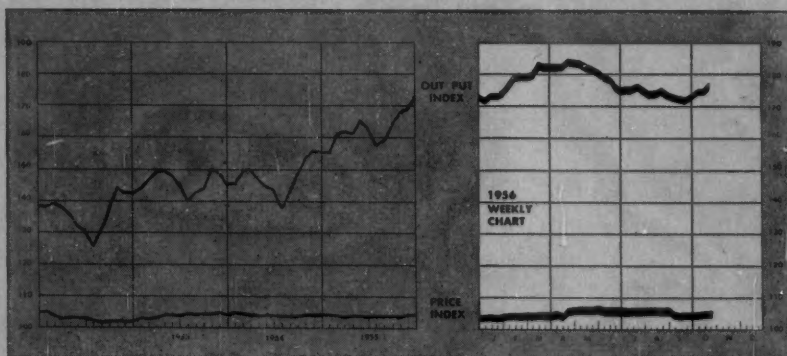
MORE FROM STOCKPILING THAN FROM SALES



TODAY'S large amount of available tungsten is a result of government rather than industrial needs. Industry consumes only one-fourth of the total produced and imported tungsten; the rest goes into government stockpiles. Having set aside 3 million units of the wartime

metal, the U.S. government last July, through Public Law 733, extended its quota for another 1.25 million units. Reasons: it's a precautionary measure and a means of sustaining a vital wartime industry that's dependent more on governmental purchase than on industry's.

BUSINESS INDICATORS



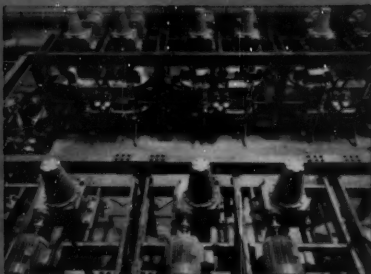
WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	177.6	176.3	167.2
Chemical Week Wholesale Price Index (1947=100)	105.8	105.6	104.6
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	449.2	442.2	427.3

MONTHLY

Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All Commodities (other than Farm and Foods)	122.9	122.5	118.5
Chemicals and Allied Products	107.1	107.3	106.0
Industrial Chemicals	121.9	122.1	118.2

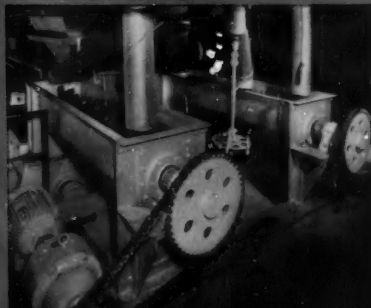
California Spray Chemical Corporation's new Complex Fertilizer Plant at Richmond, California which will shortly go on stream . . . rated capacity is 400 tons-per-day. The new plant was designed by C & I and is the first of its type in the Western Hemisphere using the PEC continuous chemical processes. Wide range and flexibility are provided, and most any desired grade of fertilizer can be produced. This process was selected by Calspray after careful research and comparison of all available processes.



a portion of the reactor floor showing acidulating vessels



gigantic rotary driers condition pelleted plant food



part of the granulating section

Complex Fertilizer



THE CHEMICAL AND INDUSTRIAL CORP.

Cincinnati 26, Ohio

Designers and Builders of Plants for the
Processing of Ammonia—
Available Throughout the World

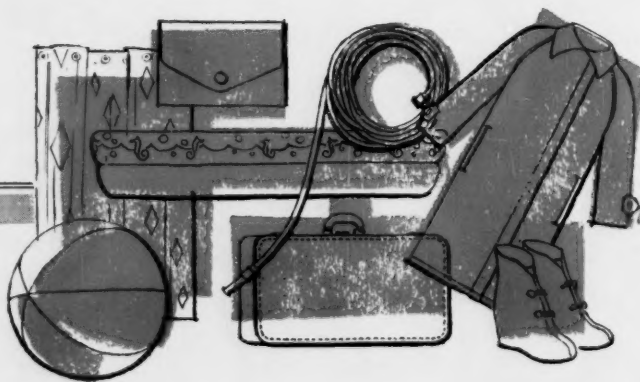
NITRIC ACID • PHOSPHORIC ACID • AMMONIUM NITRATE • COMPLEX FERTILIZER • AMMONIUM PHOSPHATE

USE **GULF ISOOCTYL ALCOHOL**

to make sure your plasticizers
meet today's
rigid color requirements

Every shipment of GULF ISOOCTYL ALCOHOL is carefully controlled to meet the most exacting production requirements for phthalic, adipic, azelaic and sebacic esters.

It's one of Gulf's "QUALITY CHEMICALS from PETROLEUM."



COMING SOON: Gulf Decyl Alcohol and Gulf Tridecyl Alcohol



We invite your inquiries—write, wire or phone

**PETROCHEMICALS DEPARTMENT
GULF OIL CORPORATION**

P. O. Box 1166, Pittsburgh 30, Pa.

ADMINISTRATION

Imitation Keynotes '57 Wage Plans

Next year's chemical wage demands are starting to take shape now—and they'll be based on imitation of what labor unions in other industries have been doing.

On the heels of last week's unveiling of the new labor contract in the soft coal industry, President O. A. (Jack) Knight of the Oil, Chemical & Atomic Workers (AFL-CIO) has called a Dec. 7 meeting of his union's wage policy committee. And if that committee agrees to back Knight's recommendation for a nationwide drive to obtain "substantial" general wage increases for oil workers, then OCAW and both other major unions in the chemical process field will be bound to strive for parallel pay rises for chemical workers.

For obvious reasons of union politics, OCAW leaders can't show preference for their oil industry members and slight their chemical dues-payers; and the two other chemical unions will feel forced to try to match any wage gains won for OCAW members. So in declaring that much more than a "token increase" is due his oil workers, Knight has pretty well set the theme for all major chemical wage bargaining as well.

Long-Term Contracts Favored: Except for the one-year soft coal con-

tract, most of the recent settlements that are likely to be used as models by the chemical unions are relatively long-term. The new wage rates in the rubber industry—negotiated under wage reopening causes—are for the remainder of two-year agreements; the new pacts in steel, aluminum and other nonferrous metals are for three years.

Immediate increases in basic wage rates range from 6.2¢/hour for rubber workers up to 15¢/hour in the contract negotiated in secrecy last month by bituminous coal operators and Thomas Kennedy, long-time understudy to United Mine Workers President John L. Lewis. Total package benefits: soft coal, 31.6¢/hour over one year; rubber, 9.2¢/hour over one year; steel, 45.6¢/hour over three years; aluminum, 46¢/hour over three

years; and nonferrous metals, 28¢ over three years.

Three of these major agreements—the ones covering steel, aluminum and rubber workers—provide for initiating supplemental unemployment benefit plans (SUB). Employer contributions were set for 3¢/man-hour worked; in addition, the steel companies accepted a 2¢ "contingent liability" to be paid if needed.

Unlike firms in other trades, chemical companies do nearly all of their bargaining on a plant-by-plant basis; and probably very few local unions at chemical plants will expect to win in their next contracts all the gains that the bigger unions have just obtained. But it's certain that chemical unions—logically or otherwise—will be using those benefits as their "asking price" in upcoming wage parleys.

Staff Shakeup for Chemical Union

A livelier—and possibly more militant—leadership for one chemical union; status quo for another.

Such are the tidings this week from Buffalo and Cincinnati, where International Chemical Workers Union (AFL-CIO) and United Mine Workers (Ind.), respectively, last week ended their 1956 conventions.

While UMW's "catch-all" District 50 will continue under the Lewis (John L.) and Lewis (A. D. "Denny") regime, ICWU delegates shook up their executive team's lineup by voting to install a new president (*CW Business Newsletter* Oct. 13) and five new vice-presidents—all viewed as tending to be somewhat more aggressive than their outgoing counterparts.

Overhaul Envisaged: In addition, ICWU delegates set up a special committee that will meet at least twice between now and next year's convention to review the entire structure of the union and consider various suggestions for overhauling it. This move was taken because the convention didn't have time to act on some of the most important resolutions offered—partly due to the spirited balloting

over the eight contested elective offices.

Accordingly, this special committee will take up such questions as:

- Establishment of a collective bargaining policy committee, which would set wage and other benefit goals for all local unions to aim at in contract negotiations.

- Changing the union's constitution so that multiplant contracts could be negotiated by company-wide and industry-wide councils. (At present, the ICWU constitution requires that contracts be made by local unions only.)

Dues Increased: Both District 50 and ICWU are increasing their membership dues and per capita tax. ICWU delegates also:

- Inserted in the ICWU constitution a clause forbidding discrimination on account of "nationality, race, color, sex or religious belief."

- Looked into a charge that some local union officials have been receiving "kickbacks" from "employers, insurance companies and labor racketeers," and left it up to the executive board to decide whether to forward the charge to the AFL-CIO's ethical practices committee.



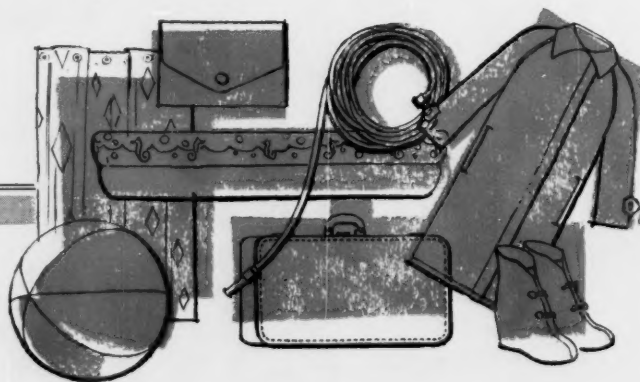
UMW'S KENNEDY: After 50 years as an understudy, a top role.

USE **GULF ISOOCTYL ALCOHOL**

to make sure your plasticizers
meet today's
rigid color requirements

Every shipment of GULF ISOOCTYL ALCOHOL is carefully controlled to meet the most exacting production requirements for phthalic, adipic, azelaic and sebacic esters.

It's one of Gulf's "QUALITY CHEMICALS from PETROLEUM."



COMING SOON: Gulf Decyl Alcohol and Gulf Tridecyl Alcohol



We invite your inquiries—write, wire or phone

**PETROCHEMICALS DEPARTMENT
GULF OIL CORPORATION**

P. O. Box 1166, Pittsburgh 30, Pa.

ADMINISTRATION

Imitation Keynotes '57 Wage Plans

Next year's chemical wage demands are starting to take shape now—and they'll be based on imitation of what labor unions in other industries have been doing.

On the heels of last week's unveiling of the new labor contract in the soft coal industry, President O. A. (Jack) Knight of the Oil, Chemical & Atomic Workers (AFL-CIO) has called a Dec. 7 meeting of his union's wage policy committee. And if that committee agrees to back Knight's recommendation for a nationwide drive to obtain "substantial" general wage increases for oil workers, then OCAW and both other major unions in the chemical process field will be bound to strive for parallel pay rises for chemical workers.

For obvious reasons of union politics, OCAW leaders can't show preference for their oil industry members and slight their chemical dues-payers; and the two other chemical unions will feel forced to try to match any wage gains won for OCAW members. So in declaring that much more than a "token increase" is due his oil workers, Knight has pretty well set the theme for all major chemical wage bargaining as well.

Long-Term Contracts Favored: Except for the one-year soft coal con-

tract, most of the recent settlements that are likely to be used as models by the chemical unions are relatively long-term. The new wage rates in the rubber industry—negotiated under wage reopening causes—are for the remainder of two-year agreements; the new pacts in steel, aluminum and other nonferrous metals are for three years.

Immediate increases in basic wage rates range from 6.2¢/hour for rubber workers up to 15¢/hour in the contract negotiated in secrecy last month by bituminous coal operators and Thomas Kennedy, long-time understudy to United Mine Workers President John L. Lewis. Total package benefits: soft coal, 31.6¢/hour over one year; rubber, 9.2¢/hour over one year; steel, 45.6¢/hour over three years; aluminum, 46¢/hour over three

years; and nonferrous metals, 28¢ over three years.

Three of these major agreements—the ones covering steel, aluminum and rubber workers—provide for initiating supplemental unemployment benefit plans (SUB). Employer contributions were set for 3¢/man-hour worked; in addition, the steel companies accepted a 2¢ "contingent liability" to be paid if needed.

Unlike firms in other trades, chemical companies do nearly all of their bargaining on a plant-by-plant basis; and probably very few local unions at chemical plants will expect to win in their next contracts all the gains that the bigger unions have just obtained. But it's certain that chemical unions—logically or otherwise—will be using those benefits as their "asking price" in upcoming wage parleys.

Staff Shakeup for Chemical Union

A liveller—and possibly more militant—leadership for one chemical union; status quo for another.

Such are the tidings this week from Buffalo and Cincinnati, where International Chemical Workers Union (AFL-CIO) and United Mine Workers (Ind.), respectively, last week ended their 1956 conventions.

While UMW's "catch-all" District 50 will continue under the Lewis (John L.) and Lewis (A. D. "Denny") regime, ICWU delegates shook up their executive team's lineup by voting to install a new president (*CW Business Newsletter* Oct. 13) and five new vice-presidents—all viewed as tending to be somewhat more aggressive than their outgoing counterparts.

Overhaul Envisaged: In addition, ICWU delegates set up a special committee that will meet at least twice between now and next year's convention to review the entire structure of the union and consider various suggestions for overhauling it. This move was taken because the convention didn't have time to act on some of the most important resolutions offered—partly due to the spirited balloting

over the eight contested elective offices.

Accordingly, this special committee will take up such questions as:

- Establishment of a collective bargaining policy committee, which would set wage and other benefit goals for all local unions to aim at in contract negotiations.

- Changing the union's constitution so that multiplant contracts could be negotiated by company-wide and industry-wide councils. (At present, the ICWU constitution requires that contracts be made by local unions only.)

Dues Increased: Both District 50 and ICWU are increasing their membership dues and per capita tax. ICWU delegates also:

- Inserted in the ICWU constitution a clause forbidding discrimination on account of "nationality, race, color, sex or religious belief."

- Looked into a charge that some local union officials have been receiving "kickbacks" from "employers, insurance companies and labor racketeers," and left it up to the executive board to decide whether to forward the charge to the AFL-CIO's ethical practices committee.



UMW'S KENNEDY: After 50 years as an understudy, a top role.



Overseas: Local Managers Take Command

While a substantial trend among U. S. chemical process companies is toward more and larger overseas branches and subsidiaries—brought on to a large extent by dollar shortages and expanding foreign chemical industries—there is an accompanying trend toward the use of fewer U. S. citizens to man these overseas operations.

A number of reasons—notably public relations considerations—are advanced by industry to explain this move to pull “Yankee” executives and scientists out of foreign branches, but not to be overlooked is the payroll factor for the parent company. For without exception, U. S. personnel in overseas jobs are higher-paid than their native counterparts, and also get traditional allowances, subsistences, and moving expenses.

Foreign Restrictions: A front-runner among reasons for this gradual, but worldwide, changeover from U. S. to foreign personnel is the practice by some countries of making it very difficult for subsidiaries to hire any but native employees. These countries re-

quire that foreign subsidiaries—wholly or jointly owned—incorporate as local firms. In this manner, local governments are able to exercise strict control.

As an example, if the French subsidiary of a U. S. company wishes to have an American president, the person considered must first obtain a “merchant’s card,” which usually takes about two years. The candidate must produce proof that he has never declared bankruptcy and has never been in jail. Proof must be obtained from all 48 states and its territories. Even candidates for subordinate executive positions must obtain a work permit, and the subsidiary must supply proof that it cannot find a French citizen suitable for the job.

The On-Loan System: To facilitate replacement of U. S. management in U. S. foreign subsidiaries, many U. S. chemical process companies have adopted an “on-loan” system. Employees of the parent U. S. company—usually high-level technical and management people—are loaned to the foreign subsidiary on a temporary basis.

Their salaries are paid by the parent company, so the problem of embarrassing comparisons is eliminated. The job of these executives is to train native employees to take over the management functions of the branch operation—leading toward an all-native staff with one or two Americans in key management positions.

U. S. foreign subsidiaries—as a rule—pay native employees higher wages than they could earn in local companies, and most engineers and chemists are said to jump at the chance to work in an American subsidiary. In Japan, liberal expense accounts and fringe benefits are counted as primary incentives for seeking employment with an American firm; Europeans, on the other hand, seem to look past financial remunerations to the highly respected U. S. methods of operation and liberal promotion policies.

‘Luxury Life’ on Low Pay: In Japan, the average “Yankee” executive employed in a U. S. chemical process company subsidiary lives better than he would with the same job in the

SOLVAY

Elberta Brand

Aluminum Chloride

DESCRIPTION

SOLVAY Anhydrous Aluminum Chloride (Elberta Brand) is produced as a high quality crystalline solid and is shipped in a variety of granulations, from extra fine to coarse screened. Formula: $AlCl_3$. Molecular Wt.: 133.3.

PROPERTIES

Specific Gravity 25°/4°C.....	2.44
Melting Point (Sealed Tube).....	190°C.
Boiling Point, 752 mm.....	182.7°C.
Sublimation Point	180°C.
Odor, in dry air.....	None
Solubility	
Water	Complete
Alcohol	Complete
Ether	Complete
Carbon Tetrachloride	Soluble
Chloroform	Soluble
Benzene	Insoluble

Aluminum chloride fumes in moist air and reacts readily with water to form aluminum oxychlorides and hydrochloric acid. It is a powerful desiccant.

TYPICAL USES

Ethyl Chloride: Aluminum chloride is a catalyst in the synthesis of ethyl chloride from ethylene.

Styrene: Aluminum chloride is used as an alkylation catalyst for the production of ethylbenzene, an intermediate for styrene.

Synthetic Detergent Alkylates: Aluminum Chloride is used as an alkylation catalyst for production of long chain olefin alkylates used in synthetic detergents.

Butyl Rubber: Aluminum chloride is the catalyst used in the production of butyl rubber.

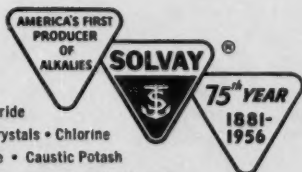
High Octane Aviation Gasoline: Aluminum chloride is used as an alkylation catalyst in the production of isopropylbenzene, a compound of aviation gasoline. It is also used in the isomerization of paraffinic hydrocarbons for use in high octane gasolines.

Dyestuffs: Aluminum chloride is used to promote condensation and ring reactions which are of great importance in the manufacture of dyestuffs and intermediates such as anthraquinone and acetophenone.

Miscellaneous: Aluminum chloride finds wide use in production of insecticides, pharmaceuticals, phenol, synthetic resins, petroleum cracking, Friedel-Crafts reactions and as an industrial drying agent.

SEND FOR INFORMATION TODAY

Get all the Facts—Mail Coupon



Aluminum Chloride • Vinyl Chloride
 Potassium Carbonate • Calcium Chloride
 Sodium Nitrite • Soda Ash • Snowflake® Crystals • Chlorine
 Sodium Bicarbonate • Ammonium Chloride • Caustic Potash
 Methylene Chloride • Monochlorobenzene • Ammonium Bicarbonate
 Carbon Tetrachloride • Methyl Chloride • Cleaning Compounds • Caustic Soda
 Para-dichlorobenzene • Ortho-dichlorobenzene • Hydrogen Peroxide • Chloroform



SOLVAY PROCESS DIVISION

Allied Chemical & Dye Corporation
 61 Broadway, New York 6, N. Y.

Gentlemen: Please send me—AT NO COST OR OBLIGATION

☐ SOLVAY ALUMINUM CHLORIDE Literature & Prices.

☐ Information—see my attached letter.

Name _____

Company _____

Position _____

Address _____

City _____ Zone _____ State _____ AN-10

ADMINISTRATION

States. Even so, he lives no better than his Japanese counterpart. However, among the nonmanagerial groups, there is a real discrepancy between Japanese and American living conditions—living standards of U.S. engineers in Japan are much higher.

The average Japanese executive employed by a U. S. subsidiary seldom has a basic salary of more than \$75 a week. Yet, many live on a luxury level, by Japanese standards—largely with the aid of company-provided cars, expense accounts etc. And in Japan—as in Europe—U. S. subsidiaries pay much better than local companies for comparable positions, and provide the traditionally U. S. methods of promotion by merit instead of by seniority and educational background.

Salary Premium in U. K.: England is unique, because of the virtual absence of Americans on the operating levels. The high degree of British technical knowledge has permitted Monsanto's subsidiary there to operate entirely with British personnel. The United Kingdom branch of Minnesota Mining & Mfg. operates with only eight "Yanks" among 1,700 employees, and American Cyanamid's British subsidiary has only two Americans among 240 employees.

U. S. employees in England usually receive a salary premium (about 20%) over American standards, plus allotments for extra expenses, e.g., sending their children to private schools. Also, there is a considerable tax advantage for Americans, since they can bank much of their salary in the U. S., where it is safe from both U. S. and English income taxes if the employee is out of the U. S. long enough.

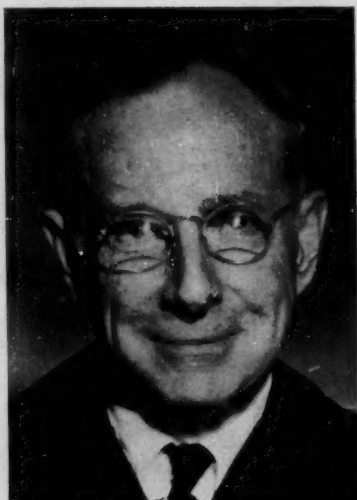
U.S. officials concede that the Britisher's performance is comparable to the American's, but the "Yank" is likely to make twice as much money. A British graduate chemist makes about \$2,800; a top British research man, \$8,000.

In spite of some reluctance to leave large investments entirely in the hands of foreigners, the era of large American staffs in foreign subsidiaries is fast drawing to a close. The expected results: that these foreign subsidiaries of U. S. corporations will continue to run as well—if not better—under local management that is rapidly becoming better versed in U. S. techniques of industrial management.

LEGAL

Clayton Act Subpoenas: Unless upset by a higher court, a recent federal district court ruling will spare companies from further "harassment" through the subpoenaing of confidential records and papers belonging to firms cited by the Federal Trade Commission under the Clayton Act and the Robinson-Patman amendment to that statute.

In a decision handed down in U. S. district court for the Southern district of New York, Judge Edward Dimock denied an application by FTC for enforcement of a subpoena issued against



JUDGE DIMOCK: Despite 'substantial identity,' no subpoena power.

Sweets Co. of America and William B. Rubin, company president, in a proceeding instituted under the Clayton Act.

In opposing the subpoena, the company had contended that FTC has no power to issue such subpoenas. And in his six-page ruling, Judge Dimock said that despite the "substantial identity" of the Clayton Act with the FTC Act, insofar as procedure and service of complaints, orders and processes are concerned, the Clayton Act omitted the provisions contained in Section 9 of the FTC Act granting the power to issue subpoenas. The commission is expected to appeal.

The ruling is not likely to impair FTC's current enforcement drive un-

der the Robinson-Patman Act. This campaign has seen a number of food manufacturers and distributors cited for alleged violations of the antidiscrimination statute in recent months.

Unfair Chrome-Plating Competition? Van der Horst Corp. of America (Olean, N.Y.) has filed a \$200,000 unfair competition suit against Hol-Chrome Corp. (Allegany, N.Y.) and 11 other defendants in the Olean-Allegany area alleging violation of trademarks and tradenames.

Van der Horst charges that the group that formed Hol-Chrome in June '55 included five former Van der Horst employees, and that Hol-Chrome is operating on trade secrets learned by these persons.

Van der Horst requests a temporary injunction against the sale of Hol-Chrome and against the use of the tradenames and trademarks, and asks for a permanent injunction and an accounting and judgment on profits made by the company, and for the dismissal of the former Van der Horst employees.

The suit charges that Hol-Chrome's slogan, "Good for the LIFE of your engine," and its tradename, Porus-Krom, are too similar to the Van der Horst counterparts—"Good for the life of your engines" and Porus-Krome.

LABOR

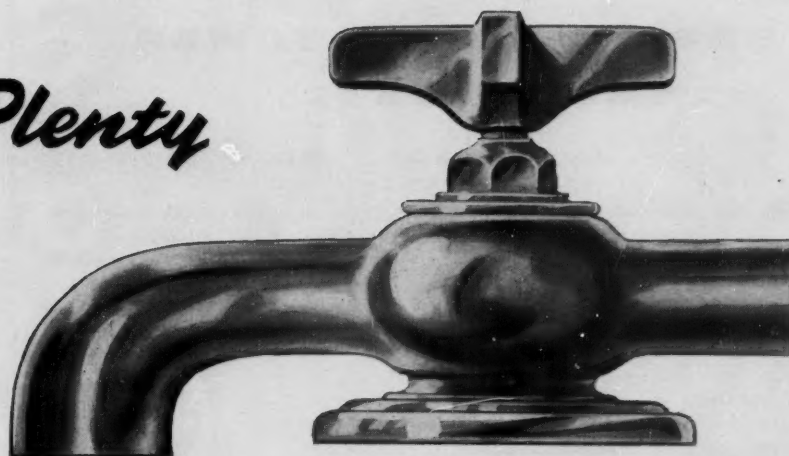
For Coordinated Bargaining: Newest move by the labor unions in the chemical process industries to coordinate bargaining at a number of related plants is the steering committee formed last week to pave the way for "some sort of continuing organization" representing local unions at 22 plants of Johns-Manville Corp.

Five international unions are involved: International Chemical Workers Union, Oil, Chemical & Atomic Workers, International Woodworkers, United Paperworkers, and the Pulp, Sulphite & Paper Mill Workers, all affiliated with AFL-CIO. One other sponsoring unit is the AFL-CIO federal labor union at Manville, N.J.

Cochairmen of the 10-member steering committee—which will meet in January to set up a more permanent organization, such as a "company council"—are OCAW Vice-President B. J. Schafer and ICWU Research Di-

in the *Land of Plenty*

**there's
plenty
of
water
for
industrial
use . . .**



If an adequate water supply is an important consideration in the selection of your new plant site, as it is for most industrial site-seekers, then it will pay you to investigate the Land of Plenty where the annual rainfall is about 30 per cent above the national average.

It's a U. S. Weather Bureau fact that the annual rainfall of the 48 states as a group averages 31-36 inches, while that of the six states served by the Norfolk and Western is 40-45 inches. And not one of the states is below the national average.

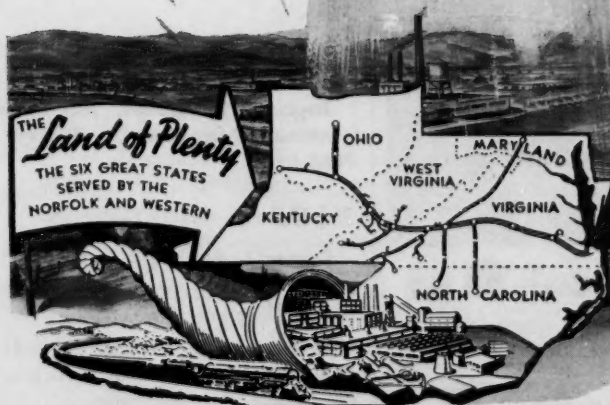
In this land of many rivers, adequate water is but one of many natural and man-made advantages for industry. Detailed factual information about these advantages will be gladly furnished by our plant location specialists, in confidence and without obligation.

Land of Plenty rivers:

James River	Pigg River	Guest River
Appomattox River	Smith River	Bluestone River
Nansemond River	Mayo River	Big Sandy River
Elizabeth River	Potomac River	Ohio River
Black Water River	Shenandoah River	Little Miami River
Roanoke River	Holston River	Scioto River
Dan River	Clinch River	
Bannister River	New River	

Write, Wire or Call:

L. E. WARD, JR., Manager
INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer CW-729 (Phone 4-1451, Ext. 474)
NORFOLK AND WESTERN RAILWAY
Roanoke, Virginia



**Norfolk
and Western
RAILWAY**

States. Even so, he lives no better than his Japanese counterpart. However, among the nonmanagerial groups, there is a real discrepancy between Japanese and American living conditions—living standards of U.S. engineers in Japan are much higher.

The average Japanese executive employed by a U. S. subsidiary seldom has a basic salary of more than \$75 a week. Yet, many live on a luxury level, by Japanese standards—largely with the aid of company-provided cars, expense accounts etc. And in Japan—as in Europe—U. S. subsidiaries pay much better than local companies for comparable positions, and provide the traditionally U. S. methods of promotion by merit instead of by seniority and educational background.

Salary Premium in U. K.: England is unique, because of the virtual absence of Americans on the operating levels. The high degree of British technical knowledge has permitted Monsanto's subsidiary there to operate entirely with British personnel. The United Kingdom branch of Minnesota Mining & Mfg. operates with only eight "Yanks" among 1,700 employees, and American Cyanamid's British subsidiary has only two Americans among 240 employees.

U. S. employees in England usually receive a salary premium (about 20%) over American standards, plus allotments for extra expenses, e.g., sending their children to private schools. Also, there is a considerable tax advantage for Americans, since they can bank much of their salary in the U. S., where it is safe from both U. S. and English income taxes if the employee is out of the U. S. long enough.

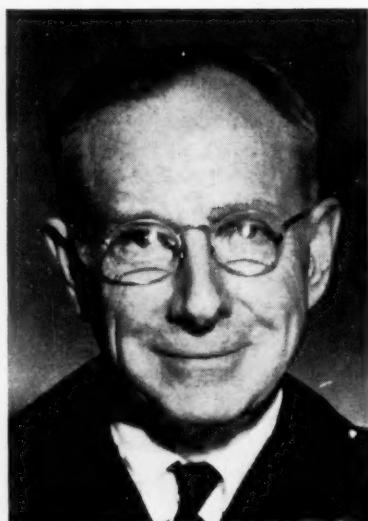
U.S. officials concede that the Britisher's performance is comparable to the American's, but the "Yank" is likely to make twice as much money. A British graduate chemist makes about \$2,800; a top British research man, \$8,000.

In spite of some reluctance to leave large investments entirely in the hands of foreigners, the era of large American staffs in foreign subsidiaries is fast drawing to a close. The expected results: that these foreign subsidiaries of U. S. corporations will continue to run as well—if not better—under local management that is rapidly becoming better versed in U. S. techniques of industrial management.

LEGAL

Clayton Act Subpoenas: Unless upset by a higher court, a recent federal district court ruling will spare companies from further "harassment" through the subpoenaing of confidential records and papers belonging to firms cited by the Federal Trade Commission under the Clayton Act and the Robinson-Patman amendment to that statute.

In a decision handed down in U. S. district court for the Southern district of New York, Judge Edward Dimock denied an application by FTC for enforcement of a subpoena issued against



JUDGE DIMOCK: Despite 'substantial identity,' no subpoena power.

Sweets Co. of America and William B. Rubin, company president, in a proceeding instituted under the Clayton Act.

In opposing the subpoena, the company had contended that FTC has no power to issue such subpoenas. And in his six-page ruling, Judge Dimock said that despite the "substantial identity" of the Clayton Act with the FTC Act, insofar as procedure and service of complaints, orders and processes are concerned, the Clayton Act omitted the provisions contained in Section 9 of the FTC Act granting the power to issue subpoenas. The commission is expected to appeal.

The ruling is not likely to impair FTC's current enforcement drive un-

der the Robinson-Patman Act. This campaign has seen a number of food manufacturers and distributors cited for alleged violations of the antitrust statute in recent months.

Unfair Chrome-Plating Competition: Van der Horst Corp. of America (Olean, N.Y.) has filed a \$200,000 unfair competition suit against Hol-Chrome Corp. (Allegany, N.Y.) and 11 other defendants in the Olean-Allegany area alleging violation of trademarks and tradenames.

Van der Horst charges that the group that formed Hol-Chrome in June '55 included five former Van der Horst employees, and that Hol-Chrome is operating on trade secrets learned by these persons.

Van der Horst requests a temporary injunction against the sale of Hol-Chrome and against the use of the tradenames and trademarks, and asks for a permanent injunction and an accounting and judgment on profits made by the company, and for the dismissal of the former Van der Horst employees.

The suit charges that Hol-Chrome's slogan, "Good for the LIFE of your engine," and its tradename, Porus-Krom, are too similar to the Van der Horst counterparts—"Good for the life of your engines" and Porus-Krome.

LABOR

For Coordinated Bargaining: Newest move by the labor unions in the chemical process industries to coordinate bargaining at a number of related plants is the steering committee formed last week to pave the way for "some sort of continuing organization" representing local unions at 22 plants of Johns-Manville Corp.

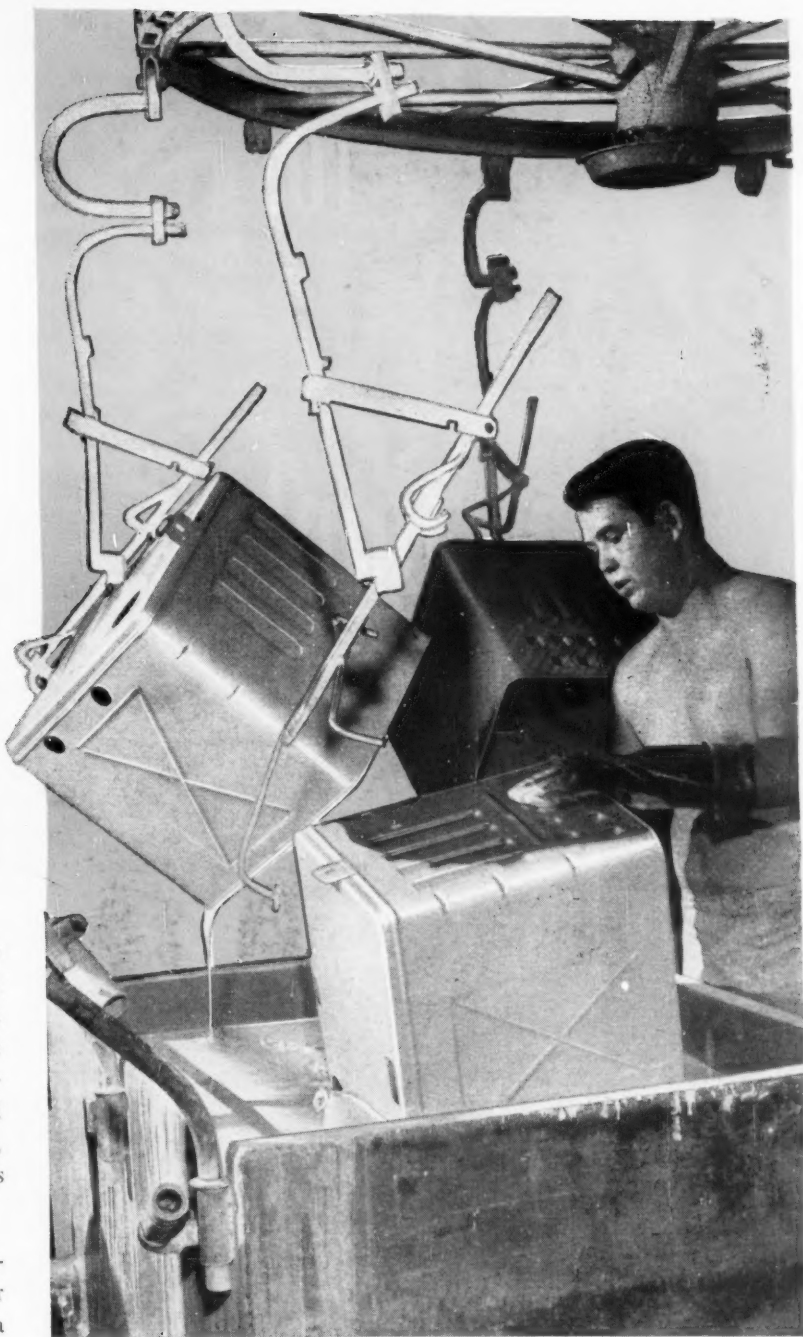
Five international unions are involved: International Chemical Workers Union, Oil, Chemical & Atomic Workers, International Woodworkers United Paperworkers, and the Pulp, Sulphite & Paper Mill Workers, all affiliated with AFL-CIO. One other sponsoring unit is the AFL-CIO federal labor union at Manville, N.J.

Cochairmen of the 10-member steering committee—which will meet in January to set up a more permanent organization, such as a "company council"—are OCAW Vice-President B. J. Schafer and ICWU Research Di-

MOLY LOWERS SURFACE TENSION

Adherence of ceramic coatings to steel can be promoted by lowering surface tension in the silicate melt. Small amounts of molybdenum compounds will greatly reduce surface tension, improve wetting and spreading power. Result—smoother, thinner, more adherent enamels and glazes.

Moly in the melt has other advantages. It permits smelting at lower temperatures. It makes possible a one-coat gray enamel, produced with a single firing. It helps control shape in special forms of glass with high surface/volume ratios.



Perhaps versatile moly compounds can help improve your ceramic product. Write for our booklet, "Properties of Molybdic Oxide". Address: Dept. 28, Climax Molybdenum Company, 500 Fifth Avenue, New York 36, N.Y.

CLIMAX MOLYBDENUM



for SOLVENTS ...think of AMSCO



Based on uniform high quality and prompt service, leading manufacturers have chosen AMSCO petroleum solvents for over thirty years. For the best in solvents—think of Amsco.

AMERICAN MINERAL SPIRITS COMPANY
230 N. Michigan Ave., Chicago 1, Ill. • 155 E. 44th St., New York 17, N. Y.
8600 S. Garfield Ave., South Gate, Los Angeles, Cal.



ADMINISTRATION

rector Otto Pragan. Prime interest of the group at the outset is in fringe benefit plans that are often established on a company-wide basis.

Shorter Work Week: AFL-CIO unions are being urged to start concentrating on bargaining for shorter work weeks in new contracts. An AFL-CIO staff economist has told affiliated unions that progress toward shorter work weeks would come first in industries that are making technological advances and are enjoying prosperous business conditions. Shorter work weeks are needed, according to AFL-CIO President George Meany, to bolster employment and purchasing power as workers are displaced by automatic feedback mechanisms.

Premium Rates Rise: In Louisiana and Oklahoma, employers are going to be billed higher premium rates on workmen's compensation insurance. Louisiana's State Insurance Commission has okayed a 10% increase intended to cover the more liberal workmen's compensation benefits put into law by the state legislature earlier this year; and Oklahoma's State Insurance Board has approved a 2.8% boost in rates for employer's liability and workmen's compensation insurance.

A slight increase—averaging about 0.8%—is now in effect in North Carolina. And in Massachusetts, newly increased benefits may force a rise in premium rates.

New Battles for Old Union: International Union of Mine, Mill & Smelter Workers (Ind.)—which has been in battles of one kind or another almost without letup during its 63-year existence—is engaged in two new altercations in Canada this week. In Calgary, Alta., Mine-Mill is trying to oust ICWU—which is now negotiating with the company for a 10% wage increase—as bargaining agent in the Nitrogen Dept. of Consolidated Mining & Smelting Co. Mine-Mill now bargains for Cominco employees at two other locations, wants to go back to joint bargaining for the three plants. And in Saskatchewan, Mine-Mill is trying to uphold two new contracts with uranium mine operators. Canada's federal government has won a court ruling that uranium mines comes under the federal labor code, and is expected to contest Mine-Mill's certification.

in the

Land of Plenty

there's

plenty

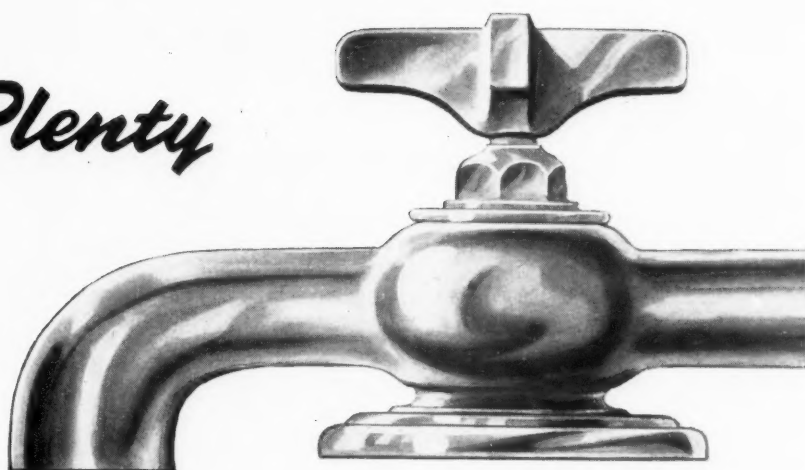
of

water

for

industrial

use . . .



If an adequate water supply is an important consideration in the selection of your new plant site, as it is for most industrial site-seekers, then it will pay you to investigate the Land of Plenty where the annual rainfall is about 30 per cent above the national average.

It's a U. S. Weather Bureau fact that the annual rainfall of the 48 states as a group averages 31-36 inches, while that of the six states served by the Norfolk and Western is 40-45 inches. And not one of the states is below the national average.

In this land of many rivers, adequate water is but one of many natural and man-made advantages for industry. Detailed factual information about these advantages will be gladly furnished by our plant location specialists, in confidence and without obligation.

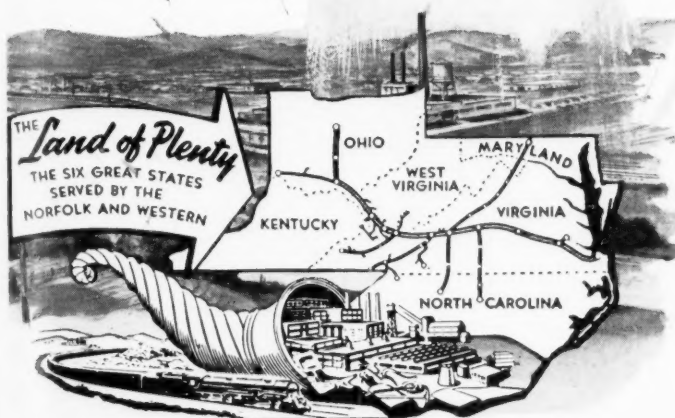
Land of Plenty rivers:

James River	Pigg River	Guest River
Appomattox River	Smith River	Bluestone River
Nansemond River	Mayo River	Big Sandy River
Elizabeth River	Potomac River	Ohio River
Black Water River	Shenandoah River	Little Miami River
Roanoke River	Holston River	Scioto River
Dan River	Clinch River	
Bannister River	New River	

Write, Wire or Call:

L. E. WARD, JR., Manager
INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer CW-729 (Phone 4-1451, Ext. 474)
NORFOLK AND WESTERN RAILWAY
Roanoke, Virginia

Norfolk
and Western
RAILWAY

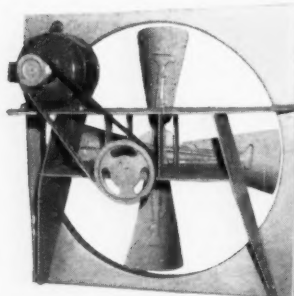


100,000 CFM AIR STREAM UP BREA PRILLING TOWER... ... SMOG FREE ...

by "BUFFALO" Air Equipment

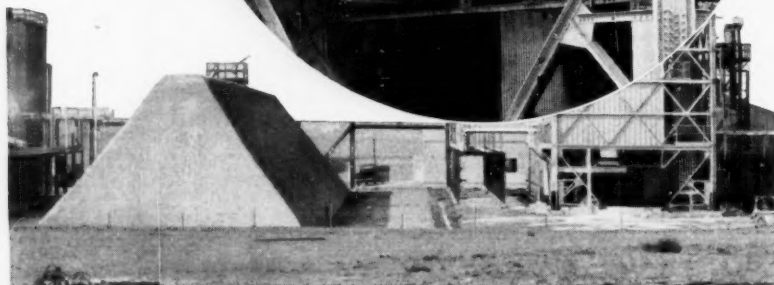
First, an elevator ride, then a bath is what happens to air in this prilling tower at the Brea, California ammonium nitrate plant of Brea Chemicals, Inc., subsidiary of Union Oil Company of California. Nine husky "Buffalo" Package Propeller Fans move the air upward against the falling ammonium nitrate solution to form the prills — six 42" fans forcing the air up from the tower base and three 54" fans inducing the draft from the top. Then, before leaving the tower, the air is cleaned of nitrate dust by a special "Buffalo" Air Scrubber of aluminum construction with all stainless steel piping and non-clogging "Buffalo" Spray Nozzles installed at top of the 200' Tower. Here is one more case where the chemical industry relies on "Buffalo" for its important air jobs. For the vital "Q" Factor of built-in Quality that means satisfaction and long life, have your contractor or engineer write "Buffalo" into the specifications for your next air job. You will be buying performance backed by a 79-year record of air leadership.

INSET: three of the six "Buffalo" 42" Package Propeller Fans forcing 102,000 cfm of air up from base of Brea Chemicals, Inc. ammonium nitrate prilling tower. Fan construction of 1/4" and 3/8" stainless steel plate with aluminum wheels.



"Buffalo" Design 53 Package Propeller Fans are ruggedly built of 1/4" steel plate with die-formed orifices, for heavy industrial service.

BREA CHEMICALS, INC. AMMONIUM NITRATE PLANT
Engineers: Chemical & Industrial Corporation, Cincinnati, Ohio



BUFFALO FORGE COMPANY
BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING
FORCED DRAFT COOLING HEATING PRESSURE BLOWING

ADMINISTRATION KEY CHANGES

William L. Russell, to vice-president; and president, Zonite Division, Chemway Corp. (New Brunswick, N.J.).

George A. Donald, to treasurer, Shawinigan Chemicals, Ltd. (Montreal).

Charles W. Kleiderer, to executive vice-president, Penn-Plastics Corp. (Glenside, Pa.).

E. Finley Carter, to director, Stanford Research Institute (Menlo Park, Calif.).

Emanuel Sonnenschein, to manager, Chemical and Fertilizer Dept., Associated Metals & Minerals Corp. (New York).

Warner B. Bishop, Jr., to vice-president, Foundry Products Division, Archer-Daniels-Midland (Minneapolis).

John M. Keene, Jr., to vice-president, sales, Gulf Sulphur Corp. (Houston).

Charles G. Chisholm, to general sales manager, Haynes Stellite Co., division of Union Carbide and Carbon (New York).

William C. Nicoll, to technical director, G. J. Liebhich Division, National Chemical & Mfg. Co. (Chicago).

C. Robert Fay, to vice-president, Paint and Brush Division, Pittsburgh Plate Glass (Pittsburgh).

Ralph R. Renzel, to vice-president, sales; and **Ralph H. Schulz**, to assistant secretary and treasurer, Freeman Chemical Corp. (Port Washington, Wis.).

RETIRED

Reginald P. Lukens, production consultant, Merck & Co. (Rahway, N.J.).

DIED

George J. Arroll, 67, founder and president, Universal Chemical Co. (Lynn, Mass.), at Lynn.

Norton P. Smith, 51, president, Klix Chemical Co. (South San Francisco, Calif.), at South San Francisco.

Coverage Crisis—

- Only 900 out of 2,500 hours of annual working time are available to the average salesman for actual selling.
- Only about 10% of all technical graduates consider a sales career.
- Only about 4% of some 600,000 chemical engineers in industry have been available for sales work.
- Only by 1963 will the output of technical graduates meet the demand.

That's why, says Hercules' Sales Director Werner Brown, . . .



Schedule-Planning Pays Off for Salesmen

Few chemical salesmen dispute the need for a definite schedule of periodic sales calls. But putting such a plan into practice isn't easy: emergencies can wreck the best-made schedules. One solution of this challenging problem came out early this week at the fifth annual sales clinic of the Salesmen's Assn. of the American Chemical Industry.

Drawing from his years of experience as salesman and sales director, Hercules' Werner Brown called for a plan for planning. Only by such an approach, he argued, can salesmen make the most of their priceless asset, time.

No method of work programing can succeed without the proper attitude. "Planning," Brown avers, "should be a continuing thing. Good salesmen must have a well-thought-out plan, even though at times they may not use it." And the program must be comprehensive, include a long-range outline "set up after the annual forecast," a short-range design "for the ensuing week," and an "often-overlooked immediate plan that covers time spent face to face with buyers."

How do you develop the planned sales program? Brown stresses analysis of daily routine as the first step. It's essential that at least 15 minutes a day be spent in categorizing work into

three groups: "the essential, the less essential, and the jobs that really don't have to be done at all or can be handled by someone else." Don't be afraid to weed out the unimportant, was his advice.

Perseverance in planning is vital. "Don't let yourself get shuffled out of your planning routine," Brown said. "And above all, don't try to do sound planning while making calls. Somehow, see that time is spent planning ahead."

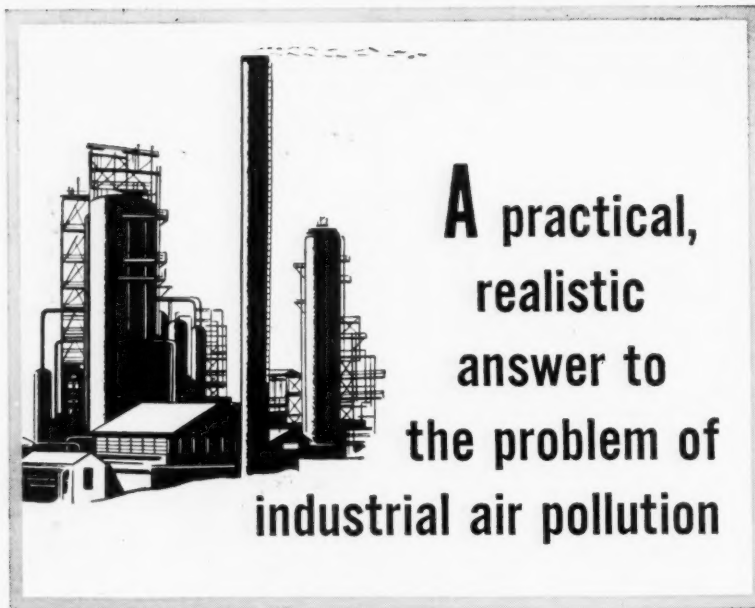
Biggest drain on the salesman's time,

says Brown, are inefficient practices. Eliminate them, and you boost selling time considerably (see box, p. 41). One time-waster: the prolonged office meeting. Insist, says Brown, on a clearly defined objective for the meeting, that attendance is confined to people able and prepared to contribute, and that the meeting reaches a well-defined answer.

Servicing marginal accounts also drains the salesman's time. Are the 75% of all customers who account for only 25% of all sales worth the time

CHECKLIST FOR SALES EFFICIENCY

- ✓ Make every hour count. Avoid home-earlys and long luncheons.
- ✓ Go light on after-hours activity. Community organization work devours time.
- ✓ Keep time spent in office conferences to a minimum.
- ✓ Concentrate sales efforts on accounts with large potential.
- ✓ Plan a measure of flexibility into the daily call schedule.
- ✓ Take full sales advantage of timely developments.
- ✓ Plan thorough, specific sales presentations to buyers.



A practical, realistic answer to the problem of industrial air pollution

**Catalytic oxidation can now eliminate
objectionable fumes and odors from your stack exhausts
effectively, efficiently — and often at an actual saving
— with the use of Houdry Oxycats®**

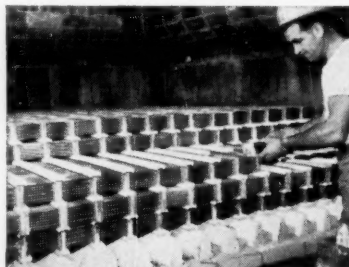
Properly engineered to your individual requirements, Houdry catalytic installations can eliminate, or reduce below objectionable levels, harmful and irritating fumes and odors in an exhaust stream.

These Oxycat installations are working effectively for a wide range of industries where combustible and organic pollutants are present, including solvents, phenols, formaldehyde, phthalic anhydride, polyethylene and carbon monoxide. Oxycats can also be used to oxidize H_2S and organic sulfides and to reduce oxides of nitrogen. And in many cases the heat released by the oxidation process will result in important fuel savings.

The key to any successful catalytic installation, of course, is the catalyst itself. Oxycats have an outstanding advantage in their exceptionally long life at high efficiency. There's no problem of frequent cleaning or reprocessing because of the Oxycat's remarkable ability to withstand contaminating agents and clogging.

It's best to design Houdry Oxidation Catalyst installations into your plant

when it is in the blueprint stage. But your engineers, working with ours, can effectively install Oxycats in any existing plant. If air pollution is a problem in your operation—if foul-smelling, irritating fumes and odors are costing you neighborhood good will—Houdry Oxidation Catalysts present a solution you cannot afford to overlook. Write on your business letterhead for complete information now.



Houdry Oxycats being installed in a waste heat boiler at a Sun Oil Co. catalytic cracking unit at Marcus Hook, Pa. This Oxycat installation and a similar one at Toledo save Sun Oil \$400,000 a year by oxidizing waste gases to generate 100,000 lb. of process steam an hour.



A Houdry Catalyst

OXY-CATALYST, INC.

INDUSTRIAL DIVISION

Wayne 6, Pa., U.S.A.

**Fume Elimination Processes and Equipment
Industrial • Automotive • Consumer Products**

Representatives in major industrial areas

SALES

investment? To answer that question, Brown urged SAACI sessiongoers to ask themselves these questions:

- Is the account's business sound?
- Is the management aggressive?
- Will the account grow as a result of its practices?

Planning Hints: Regardless of the specific procedure a salesman sets up, four factors are common and essential to all plans:

- **Quality calls.** "Nothing disrupts the salesman's objectives more than excessive concern over the number of calls. Hustlers in our firm, for example, make 500-600 calls/year." Brown's advice to his audience was to "think of quality first, quantity second. What you get done is what counts."

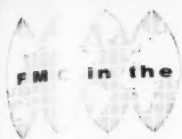
- **Preparation.** Purchasing agents generally blame poor sales calls on the salesman's lack of information, inadequate preparation. The remedy: scan the account's buying history, know the trade balance between the customer and your company."

- **Flexibility.** "More often than not, sales objectives become moving targets, call for rapid changes in our planning. And while this condition works against long-range planning, it gives more freedom for good short-range planning." Designing flexibility into the work pattern avoids the danger of rigid routine or "missing out on good bets." A reservoir of prospects helps.

- **Timing.** Periodically, a purchasing agent gets "hot," is eager to take some sort of action. Such opportunity arises when contract periods expire, when strikes or other interruptions hobble sources of supply and when the customer's management or its policy changes. It's then that the buyer is likely "to be changing his mind or thinking about your products." Under such circumstances, "it's wise to shift the normal call schedule, concentrate on the prospect."

What results will a planning program produce? Naturally there's no handy formula, no guarantee of bulging order books.

Brown cautions salesmen never to expect visible results too soon. But a small improvement can be important. In sales, only 10% more business can mean the difference between success and failure. And planning can do at least that much. "For any salesman," Brown sums up, "planning ahead is a sure route to success."



FMC in the chemical world

How Many Bricks

Build a Research Center?

FMC Chemical Divisions' new Central Research Laboratory at Princeton, N.J. is among the most modern and best-equipped edifices of its kind in the chemical industry.

But our pride and optimism lie not in this structure. They are based instead on our research people and their demonstrated spirit of constructive cooperation.

FMC Central Research Laboratory will accelerate our expanding program of new product development that supplements existing research activities of our operating divisions. It is indicative of our determination to continue to grow by better serving agriculture and industry.



Chemical Divisions **FOOD MACHINERY AND CHEMICAL CORPORATION**

WESTVACO CHLOR-ALKALI DIVISION *Alkalies, Chlorinated Chemicals and Carbon Bisulfide* • BECCO CHEMICAL DIVISION *Peroxygen Chemicals* • NIAGARA CHEMICAL DIVISION *Insecticides, Fungicides and Industrial Sulphur* • OHIO-APEX DIVISION *Plasticizers and Chemicals* • FAIRFIELD CHEMICAL DIVISION *Pesticide Compounds and Organic Chemicals* • WESTVACO MINERAL PRODUCTS DIVISION *Phosphates, Barium and Magnesium Chemicals*

Administrative Offices • 161 East 42nd Street, New York 17, New York

BAKER PROCESSING CHEMICALS. *ne of*

*"...your precise manufacturing
and control methods have
been helpful to us in developing
better Sylvania
products"* •

TODAY, through the magic of television, we can stop, look and listen all over the world with electronic eyes and ears. A name long associated with television, and one synonymous with the manufacture of television tubes of the highest standards of excellence, is *Sylvania*.

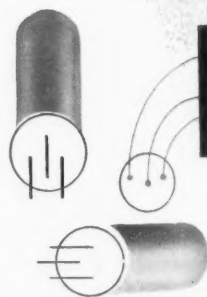
As Sylvania points out in their letter opposite, the selection of raw materials plays an essential part in maintaining these standards. We at Baker are proud when Sylvania writes: "... your precise manufacturing and control methods have been helpful to us in developing better Sylvania products." We are proud of the part Baker chemicals have played in helping Sylvania to safeguard the well-earned prestige of their precious trademark.

Your product, of course, may be far afield from electronics. But the principle behind Sylvania's choice of Baker as one of their principal suppliers remains unchanged.

Would you, for example, like to reduce the cost of *your* product by eliminating one or more costly purification steps? Improve quality? Simplify your process?

Baker chemicals of *controlled purity and uniformity* may be the key. Or perhaps Baker can manufacture the chemicals you need to *your specification*. Either way, they are available in tonnage quantities.

Feel free to call on us at any time... perhaps we can help you. Needless to say, your trademark would always be regarded as precious as our own, and safeguarded with equal vigilance.



PURITY BY THE TON - FO

s. ne of the guardians of this precious trademark



SYLVANIA

ELECTRIC PRODUCTS INC.



TOWANDA • PENNSYLVANIA

Tungsten and Chemical Division

March 14, 1956

Mr. Warren Schumacher, Sales Manager
Fine and Industrial Chemical Division
J. T. Baker Chemical Company
Phillipsburg, New Jersey

Dear Mr. Schumacher:

Many of the distinctive qualities of Sylvania products are the result of our exacting methods of producing the phosphors and then the finished tubes. It is essential for us to be most discriminating in the choice of chemicals we use as our raw materials for this purpose.

We are pleased to tell you that over the years we have found that the purity of your chemicals meets our most rigid specifications. In fact, we have developed a sense of security since you have been supplying us with several chemicals which we use in processing. The chemical and physical uniformity from lot to lot is a help in eliminating variables, and our production problems are made easier accordingly.

Your representative has been particularly helpful because of his complete understanding of our specific needs, and in making certain that these chemicals arrive at our plants in ample time to meet our production schedules.

We are sure that your precise manufacturing and controlled methods have been helpful to us in developing better Sylvania products.

Sincerely yours,

SYLVANIA ELECTRIC PRODUCTS INC.

T. R. Coyle
Division Purchasing Agent

TRC:FJM

INCANDESCENT LAMPS • RADIO TUBES • FLUORESCENT LAMPS AND FIXTURES • ELECTRONIC DEVICES
TELEVISION PICTURE TUBES • PHOTOFLASH LAMPS • RADIO AND TELEVISION SETS • ATOMIC ENERGY

J. T. Baker Chemical Co.

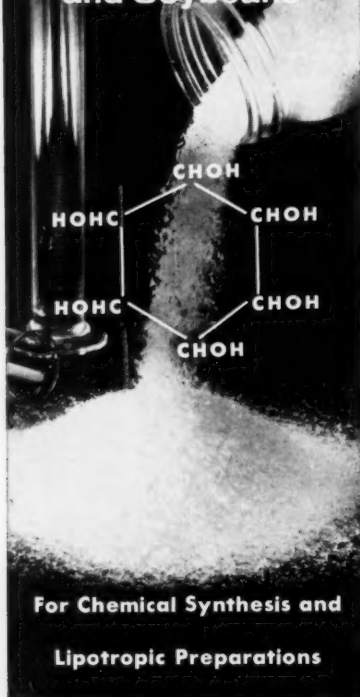
REAGENT • FINE • INDUSTRIAL

Phillipsburg, New Jersey

PRODUCTION USE

Staley's®

Products from Corn
and Soybeans



For Chemical Synthesis and
Lipotropic Preparations

INOSITOL N. F.

Inositol N. F. is a product that holds great promise, not only for medicine, but for many fields of industry.

A recognized member of the B-Complex vitamin group, it has several applications in the pharmaceutical industry. It is used either alone or with certain vitamins, as a lipotropic agent. The six hydroxyl groups in the Inositol molecule lend themselves to esterification and ether formation. It is also used in chemical synthesis.

You can depend on Staley, one of the leading corn processors and chemical manufacturers, to supply your needs for a high grade, pure Inositol compound. At your request, Staley will be glad to send complete data, or to meet with you to discuss your Inositol requirements.

For information about other Staley products; Lecithin, Leucine, Phytic Acid, Inositol, Tyrosine, MSG, HVP, Calcium Phytate, Amino Acid Mixtures, Corn Steep Liquor and Fermentation Nutrients, write:

50
ANNIVERSARY
A. E. Staley Mfg. Co.
DECATUR,
ILLINOIS



SALES

Chemical buyers demand...

- Respect for their position.
- Consideration of buyers' viewpoint.
- Facts.
- Time to study proposals.



Put these facts to use, claims Sales Analysis Institute's Douglass Kirk, and you . . .

Put Creativeness into Selling

Psychologists may define creativity differently; but for the chemical sales manager or salesman, it's nothing more than learning how to think and talk from the viewpoint of each specific customer.

That's the point Douglass Kirk stressed this week to attendees at the Salesmen's Assn. of the American Chemical Industry's annual sales clinic (see also p. 41).

The travel-tired salesman knows well the numerous obstacles to sales: complaints against off-grade shipments, objections to higher price. Viewed as obstacles, these will likely remain effective barriers to sales. But viewed from the buyer's horizon, the obstacles are really opportunities for creative marketing and the signed contract.

Human relations dominate the "buyer's viewpoint," Kirk contended; to make a sale, cater to the buyer's need to feel important, to his belief that no one else has the same problems, to his demand for product and business information, and to his need for time to make purchasing decisions.

Here's how the purchasing agent's outlook can be adapted to imaginative marketing strategy:

- Handle objections by quieting

the negative emotion that accompanies a skeptical attitude. Discuss and respect buyers' opinions.

- Become skillful in observing and analyzing customers' requirements. Relate them—and your products—to the buyers' viewpoints.

- Develop to the utmost a consideration of human and social relationships.

- Demonstrate convincingly how your product or idea can improve the customers' conditions, processes or products.

- Furnish sufficient technical data and examples of the experience of others.

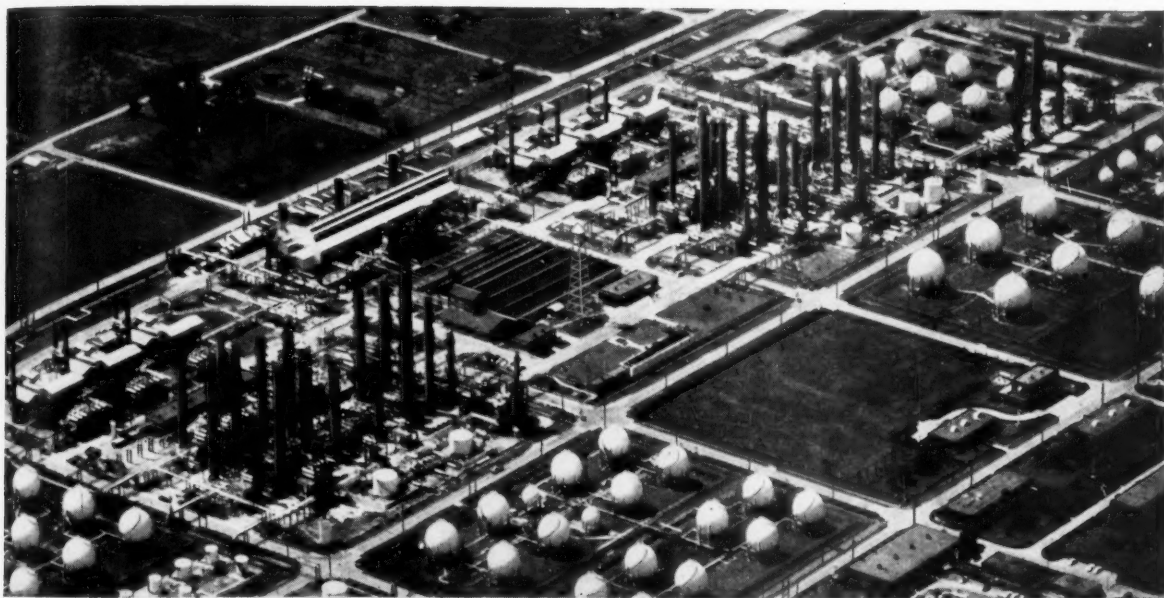
- Overcome price resistance by proving that the benefits of your idea are worth the extra cost.

- Handle the "difficult personality" by developing an attitude of tolerance, emotional control, and by showing him how to reach his job or life goals easier with your ideas.

Creative selling, says Kirk, is nothing more than applied organized thinking. "Even the best of salesmen and executives never stop learning something new about it." But every new scrap of experience gained boosts the value. Kirk believes it's worth a fair try.

butadiene

**Port Neches expansion,
200,000 to 300,000 tons/year
by Foster Wheeler**



Present facilities of the world's largest Butadiene plant—the Port Neches plant of Neches Butane Products Company—will be augmented by Foster Wheeler to effect a 50% increase in total capacity.

FOSTER WHEELER CORPORATION will provide process and mechanical design, engineering and construction for the expansion program at the Port Neches Butadiene plant of the Neches Butane Products Company. The plant, recently purchased from the government, is jointly owned by the Texas-U.S. Chemical Company and Goodrich-Gulf Chemicals, Inc.

The present capacity of this plant, the largest in the world for the production of Butadiene, will be increased from 200,000 tons/year to 300,000 tons/year.

In addition to new process units, new steam generation, cooling water utilities and inter-plant facilities will also be provided by Foster Wheeler.

With engineering offices in New York, London, Paris and St. Catharines, Ontario, and complete fabrication facilities at Mountaintop, Pa., Dansville, N.Y., Carteret, N.J., St. Catharines, Ontario and Egham, Surrey, England, Foster Wheeler offers a world-wide service in the design, engineering, fabrication and construction of petroleum, petrochemical or chemical process plants or processing units.

FOSTER  WHEELER

NEW YORK • LONDON • PARIS • ST. CATHARINES, ONT.



More than 86,680 welds in complex column by Downingtown

Diameter: 11' 11" I.D.

Total Height: 93' 11".

Material: Stainless steel, Type 304. Carbon steel skirt and base ring.

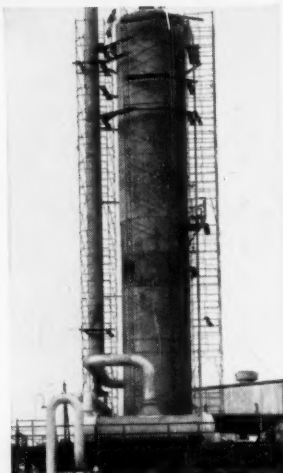
Shell Thickness: 1/2" and 3/8".

40 Trays and downcomers. 177 bubble caps and risers on each tray.

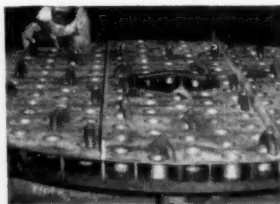
Code Stamping: National Board and ASME. Sandblasted and pickle washed.

Downingtown welders completed more than 86,680 separate stainless steel welds during fabrication of this stainless steel column. Tolerances of $\pm 1/8"$... $\pm 1/16"$... even $\pm 1/32"$... were maintained in the shaping, positioning and welding of thousands of stainless steel parts. Lapsed time from drawing board to final field testing: less than six months.

Send for Bulletin PF. It tells the story of Downingtown skill and experience that enable us to breeze through complex fabrication jobs like this one.



Field tested by Downingtown... inspected by customer and Hartford... Code stamped on location.



Special jig for welding stainless steel risers to stainless steel tray.

Downingtown Iron Works, Inc.

HEAT EXCHANGERS—STEEL AND ALLOY PLATE FABRICATION

1448 S. 66th St., Milwaukee 14 • 52 Vanderbilt Avenue, Room 2021, New York 17
• 251 Hanna Bldg., Cleveland 15 • 936 W. Peachtree St., N.W., Room 134,
Atlanta 9 • 208 So. LaSalle St., Room 794, Chicago 4 • 576 Roosevelt Bldg., Los
Angeles 17 • 142 Wallace Ave., Downingtown, Pa. • 107 Riverside Circle,
Marshfield, Mass. • 4247 North Ave., No. 12, Cincinnati 38, Ohio • 57 E.
Wentworth Ct., Room 107, Minneapolis 19, Minn.



CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

SALES

Preview of a Menace

From the jungles of Africa to the rolling prairies of the U.S., there's no greater menace to man than insects. That's the point Shell Chemical makes with telling effectiveness in its new, 27-minute long color movie, "The Rival World." Over three years in preparation, the film portrays the insect menace in various parts of the world.

Chemicals are suggested as the only practical method of combating the threat. Shell is mentioned only twice.

The picture, which has won awards at foreign exhibitions, cost Shell an estimated \$150,000 to produce and is now available for screening before farm, civic, educational and other audiences.

Frisco 'Fishyback'

The first link in a possible web of motor-water routes (CW, Oct. 6, p. 60) on the West Coast will be operating by early '58.

California's Public Utilities Commission has granted Pacific Trailerships, Inc., a certificate of public convenience and necessity to transport trucks by sea between San Francisco and Los Angeles.

Proposed rate for this "whaleback" or "roll-on roll-off" service: \$2/linear ft. of trailer. PT will get financial help from Eastern interests, will probably get the Federal Maritime Board to underwrite some of the cost of facilities.

DATA DIGEST

- **Cobalt molybdenum catalysts:** Brochure outlines catalyst use in upgrading, by hydrogenation, a wide molecular-weight range of petroleum stocks. Performance data on catalytic activity, durability, service life, yields, hydrodesulfurization and color stabilization are included. Girdler Co. (Louisville, Ky.).

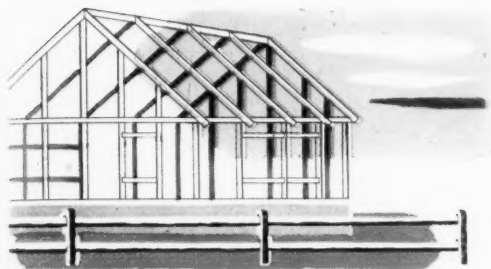
- **Hydrogen peroxide:** Bulletin offers suggestions for safe bulk-handling and storage of hydrogen peroxide. Use of tanks, hose, piping, compressors and other equipment is described in detail. Solvay Process Division, Allied Chemical & Dye Corp. (New York).

- **Glass:** 4-p. bulletin describes properties, applications and characteristics of company's flat glasses, gives technical data on Pyrex, Vycor, heat-

PROBLEM: PRESERVATION

ANSWER: NUODEX ADDITIVES

SPECIALIZED CHEMICALS TO HELP MAKE GOOD PRODUCTS BETTER



for wood preservation



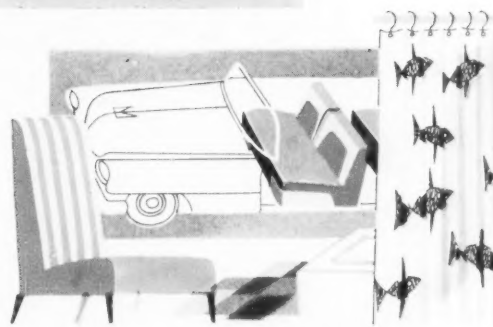
for paints

EXAMPLE: Nuodex Fungicides

MANY TYPES FOR MANY INDUSTRIES



for textile preservation



in the world of plastics

Nuodex Fungicides provide protection against microbial deterioration—characterized by mildew, decay, dry rot—in fine adhesives, cordage, paints, plastics, textiles, wood, leather . . . to name only a few.

Meeting the exacting requirements of many industries, Nuodex offers a broad range of preservatives—mercurials, metallo-organics, and organics. Years of laboratory and field experience back every product.

If you have a problem in preservation, we invite the opportunity to help you solve it.

Cooperative technical service, literature, and samples are available to you at all times.

Nuodex Additives are chemical compounds designed to serve many industries in many ways. Behind them is a policy of continuous research. Available to you is cooperative research, without obligation, on any problem within our wide scope. For an old or a new formula, if you feel that your product is "just one step short of perfection" we will be happy to discuss it with you. We may already have the answer.



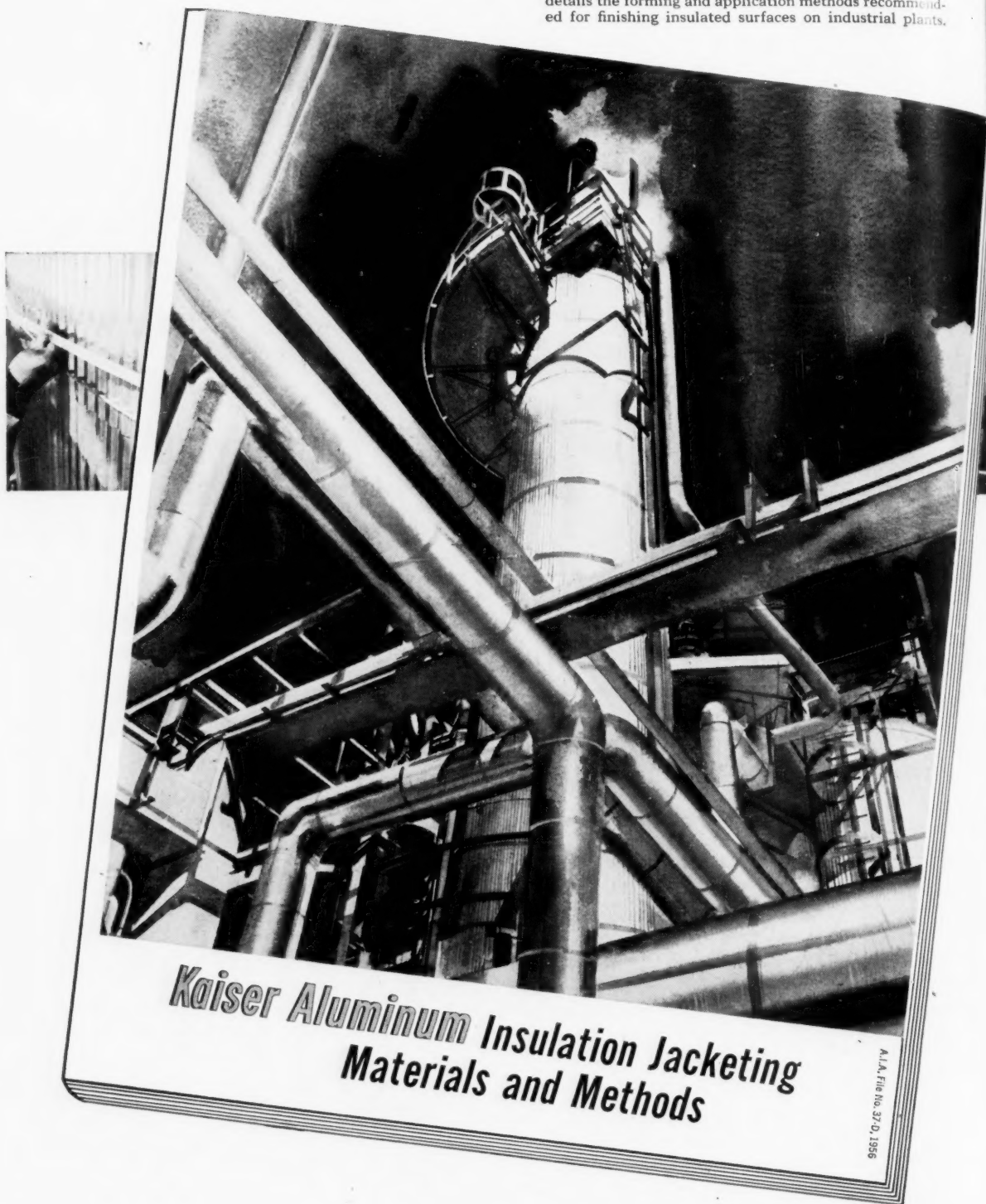
NUODEX PRODUCTS COMPANY... 342 MADISON AVENUE, NEW YORK 17, N. Y.

A Division of Heyden Chemical Corporation

NOW... NEW MANUAL

40 PAGES—FULLY ILLUSTRATED

Thoroughly describes aluminum jacketing materials... details the forming and application methods recommended for finishing insulated surfaces on industrial plants.

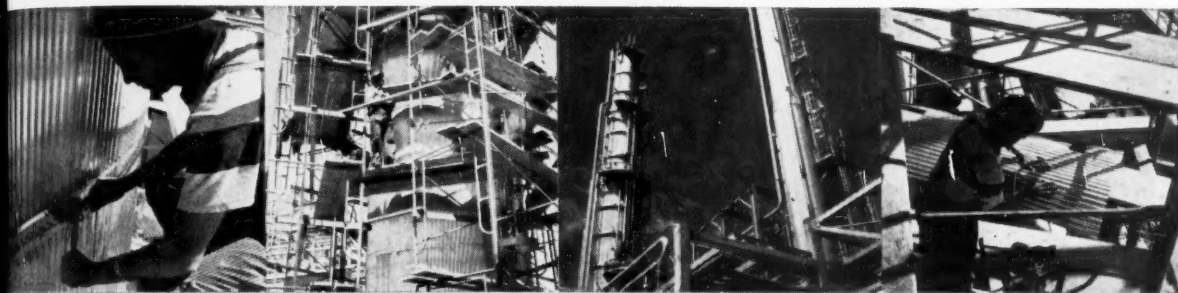


**Kaiser Aluminum Insulation Jacketing
Materials and Methods**

A.I.A. File No. 37-D, 1956

L SHOWS YOU HOW TO GET

- ✓ Complete Insulation Jacketing
- ✓ Longer Jacketing Life
- ✓ Improved Appearance
- ✓ Lower Cost



Plant designers, contractors and owners can now take advantage of newly-developed methods for getting more complete coverage of insulation with aluminum jacketing.

This new Kaiser Aluminum manual makes available—for the first time—complete information on the subject of aluminum jacketing.

Emphasizes Complete Coverage

Besides showing methods for jacketing tanks, vessels and straight runs of piping, the manual shows how to jacket fittings and heads—elbows, T's, valves, flanges, reducers, branch connections, expansion couplings, tank roofs, outlets and flat, dished and conical heads.

And because these methods include adaptations of the construction industry's efficient "dry wall" techniques, they give you these other important advantages: faster, safer application, lower costs, neater installations that require less cleanup.

On-the-job Techniques Illustrated

Photographs and tables throughout show typical ex-

amples of how Kaiser Aluminum is applied in actual industry situations. Drawings and diagrams provide details of expansion joints, pipe jacketing, flashings, insulation and jacketing support arrangements for vertical walls and for storage tank roofs.

Snap Jacket Introduced

The manual introduces *snap jacketing*—refinements of proven techniques developed from Kaiser Aluminum's "idea partnership" with customers. Using these new techniques, one man working alone can quickly apply weather-tight jackets to piping.

Send the coupon today and get your free copy of this valuable manual. And for immediate assistance on any jacketing requirements, call the Kaiser Aluminum sales office listed in your telephone directory. Process Industries Department, Kaiser Aluminum & Chemical Sales, Inc., General Sales Office, Palmolive Bldg., Chicago 11, Illinois; Executive Office, Kaiser Bldg., Oakland 12, California.

Kaiser Aluminum

materials for the process industries

Send your coupon today! →

See "THE KAISER ALUMINUM HOUR." Alternate Tuesdays,
NBC Network. Consult your local TV listing.

KAISER ALUMINUM & CHEMICAL SALES, INC.
Process Industries Department, Room 71014
1924 Broadway, Oakland 12, California

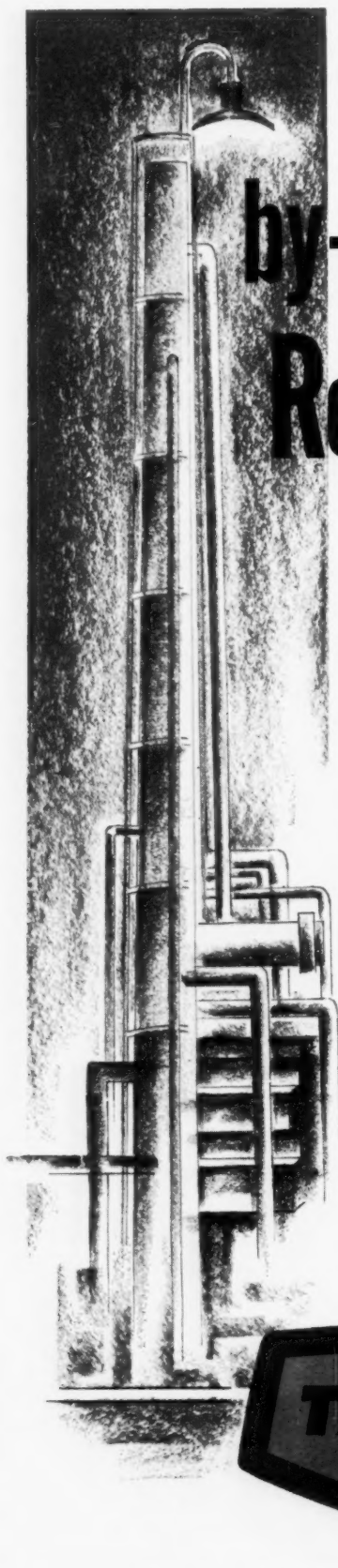
Please send my copy of your new manual "Kaiser Aluminum Insulation Jacketing Materials and Methods." I understand there is no obligation.

NAME _____

TITLE _____ COMPANY _____

ADDRESS _____

CITY _____ STATE _____



by-product Refining

*by DISTILLATION...
including high temperature
and high vacuum...*

Rendered on a toll basis—or the outright purchase of the starting by-product.

The facilities and experience of Truland may be employed advantageously for the economical upgrading and disposal of solvent mixtures and organic by-products.

Our technically trained personnel are available to discuss the refining of any solvent mixture or organic by-product.

Send for new booklet

which describes our operation —



Division of The Trubek Laboratories Incorporated

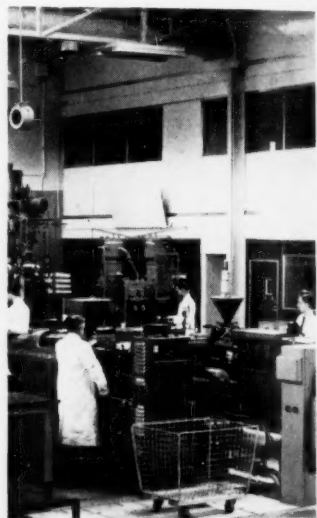
SALES

resistant and infrared reflecting glass. Corning Glass Works (Corning, N.Y.)

- **Organic chemicals:** U.S. Tariff Commission's annual report, "Synthetic Organic Chemicals, United States Production and Sales, 1955," lists manufacturers of each item, gives statistics on production, sales, imports and research expenditures in synthetic organic chemical industries. Government Printing Office, Washington, D.C.

- **Essential oils:** 11-p. bulletin lists latest revised prices of company's essential oils for wholesale quantity purchases. Fritzsche Brothers, Inc. (New York).

- **2-methyl-5-ethyl pyridine:** 6-p. folder gives information on properties.



Service Goes Global

TECHNICAL service for Imperial Chemical Industries' Customers, both in England and abroad, is being centralized in a new, 56,000-sq.-ft. building near London. Seven specialized laboratories will cope with problems in molding, general thermoplastic compounding, extrusion, rubberlike polymer technology, monofilaments and films, rigid plastic fabrication and fluorine polymer technology. The structure doubles as a showcase; it's built largely of plastic.

for improved production

of esters, amides, ketones, peroxides,
ureides and many other acid derivatives,

A ACID CHLORIDES (RCOCl)

Available carload, less carload

Acetyl Chloride
Butyryl Chloride
Caproyl Chloride
Capryloyl Chloride
Cinnamoyl Chloride
Lauroyl Chloride
Myristoyl Chloride
Palmitoyl Chloride
Phenylacetyl Chloride
Propionyl Chloride
and
others, made to order

In many cases, acid chlorides are indispensable. Advantages include better yields and conversions, shorter reaction times, lower reaction temperatures and lighter colored finished products:

Amides from amines or amino acids • Ureides from ureas
Esters from alcohols • Peroxides from sodium peroxide
Ketones from aromatic hydrocarbons

INTERMEDIATES DIVISION

The TRUBEK LABORATORIES Inc.

Established 1932

EAST RUTHERFORD

NEW JERSEY



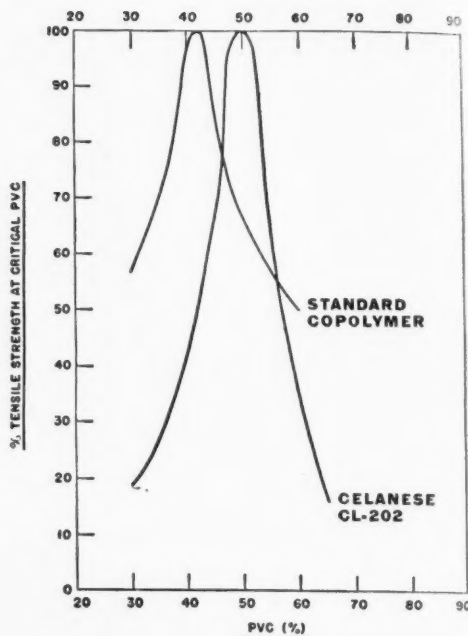
COPOLYMERS 0



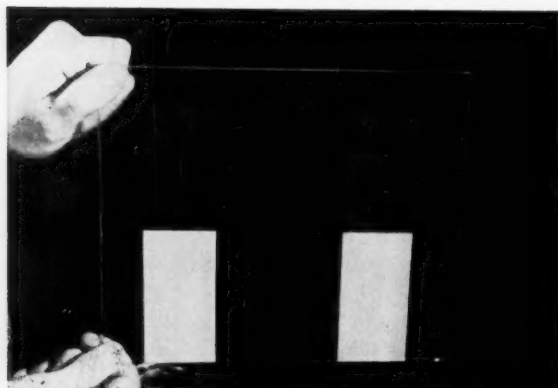
PRIMER SEALER WITH
CELANESE EMULSION

PRIMER SEALER WITH
STANDARD EMULSION

LOW TEMPERATURE COALESCENCE. Pictured above are two primer sealers identical in formulation except for the emulsions used (both homopolymers). These primers were cast (4 mil wet film) at 34° F. on glass and allowed to cure overnight at this temperature. The paints were then stained and photographed from the reverse side of the glass. The primer on the left made with Celanese PVAc exhibited superior film coalescence as evidenced by the sharp reduction in stain penetration.



HIGH PIGMENT BINDING. Celanese emulsions are designed as paint vehicles. Because of this they exhibit extremely high pigment binding capacity. The above graph was prepared by plotting the tensile strength of paint films at progressively higher PVC's. A standard formulation was used and only the emulsions differed. In this comparison (both copolymers) the Celanese emulsion exhibited a critical PVC of 8% above the other copolymer.

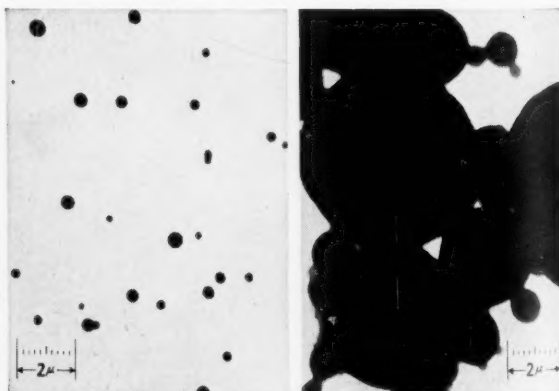


STANDARD HOMOPOLYMER

CELANESE CL-102

STANDARD COPOLYMER

SUPERIOR WATER RESISTANCE. Pictured above are three drawdowns of unpigmented PVAc films. (Both homopolymers plasticized with DBP.) The films were dried 72 hrs., then immersed in water for 5 min. The CL-102 film in the center maintains its crystal clear appearance and is substantially unaffected by the water.



CELANESE EMULSION

STANDARD EMULSION

FINE PARTICLE SIZE. The "inside story" of Celanese improved PVAc emulsions is clearly demonstrated in the above photomicrographs. Fine particle size indicates higher pigment binding, better non-settling, tighter, more closely knit films and better penetration of chalky or porous surfaces when applied at low viscosities.

FOR HOMOPOLYMERS...

**both Celanese PVAc Emulsions can give
you highest quality latex paints**

With the new Celanese PVAc Emulsions—CL-102 Homopolymer and CL-202 Copolymer—you can formulate paints with quality unsurpassed by any latex paint, regardless of the type or price of the emulsion used. These are broad claims! . . .

And we can back up these claims because Celanese PVAc emulsions are specifically designed as paint vehicles and represent the latest advances in PVAc emulsion technology...advances like these:

Can be formulated at PVC's approaching those of alkyd flats.

Extremely fine particle size.

Superior low-temperature film coalescence—even below 40°F.

Tough, flexible, weather-resistant films.

Superior freeze-thaw stability.

High solids content: 55% \pm 1.

Superior pigment wetting ability—extra margin of safety against flocculation difficulties.

Crystal-clear, water-resistant films.

Excellent mechanical stability; can even be milled.

A Celanese technical representative will be happy to discuss these characteristics with you and assist you with any technical problems you have. In addition, Celanese has prepared a manual of standard laboratory tests by which you can determine the properties of any resin emulsion vehicle. You can obtain a copy of this manual along with technical bulletins covering Celanese PVAc paint emulsions by filling out and mailing the coupon below.

Celanese®

What makes the big difference in vinyl latex paints?

The emulsion! And Celanese offers the paint chemist a free manual that shows how to find the big difference in emulsions.

Celanese
plastics and resins

EXPORT SALES: Amcel Company, Inc. and Pan Amcel Company, Inc., 180 Madison Ave., New York 16.

Celanese Corporation of America: Plastics Division,
Box 163-J, 290 Ferry Street, Newark 5, New Jersey

☐ Please send me brochure on Celanese PVAc Emulsions, including test manual. ☐ Please send me samples of Celanese PVAc Homopolymer and Copolymer Emulsions for paints.

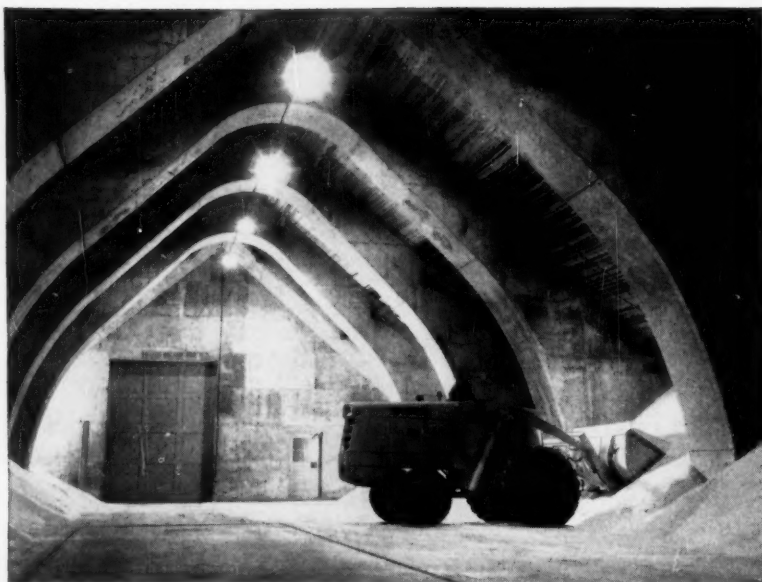
NAME _____

TITLE _____ COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____





Chemical Processing Staff Photo

60,000 tons to distribute yearly; lots as small as 25 lbs.

International Salt Company chooses Michigan for rehandling job in new Chicago warehouse

This world-famous company, largest producers of salt in America, have a tremendous material-handling problem at their recently-completed, completely-modern warehouse in Chicago. Into this huge, arched, cathedral-type building 178 feet long, 162 feet wide, and 70 feet high comes 60,000 tons of salt a year. All of it—120,000,000 pounds, in 10 different types and sizes—has to be re-handled for shipment. Some lots run 50 tons or more each . . . some are as small as 25 pounds. One tractor shovel does *all* re-handling from stockpiles, feeding the salt, on order, to centrally-located weigh hoppers for bagging or bulk shipment (same unit also loads salt, at times of peak demand, directly into trucks).

Tractor Shovel is key to operation

In selecting this tractor shovel, so important to the entire operation, prime considerations were:

1. Large capacity
2. Speedy handling
3. Utmost safety and
4. Low maintenance costs.

In the opinion of International Salt Company officials, *only one machine passed ALL tests with flying colors: a Michigan Tractor Shovel!*

Chosen from 5 models

With five basic models, 44 to 165 hp, and buckets from 6 cubic feet to 5 cubic yards, to choose from, International Salt Company picked the 80 hp, 1 cubic yard,

bucket wheel drive Michigan Model 75B you see here.

This unit, like all Michigans, gives International Salt the efficiency only a matched all-Clark-designed and built power train can give. No-clutch shifting to change speeds and direction, at the flick of a lever. Power steering. Shock absorbing torque converter with 3-to-1 torque multiplication. Forward and reverse speeds to 26 mph. Adequate power and weight, plus low-level rollback and low-level-carry, to get and deliver heaping loads. Utmost safety, with big brakes and excellent all-around visibility. Planetary axles which *completely eliminate axle breakage.*

See Michigan in action

No matter what kind of bulk material *you* have to handle—fertilizer, foods, sand, or chemicals—these Michigan features are well worth checking. It's simple to do. Write or call us any time. We'll be glad to help you analyze which size Tractor Shovel best fits your needs . . . then show you that machine in action, in your plant, doing the jobs you want to see done!

Michigan is a registered trade-mark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2459 Pipestone Road
Benton Harbor 44, Michigan

**CLARK®
EQUIPMENT**

SALES

specifications, shipping data, applications and typical reactions of MEP. Carbide and Carbon Chemicals Co. (New York).

- **Available from U.S. Dept. of Commerce, Washington, D.C.:**

- **Trade lists:** Separate trade lists of foreign business firms list chemical importers and dealers for Argentina and Austria, feedstuffs importers and dealers for Netherlands West Indies, paints, varnishes and pigments importers, dealers and manufacturers in Syria. Price: \$2 each.

- **Pharmaceuticals:** Separate booklets give pharmaceutical regulations of Ecuador and Iraq. Price: 10¢ each.

- **Pulp and Paper:** 465-p. report analyzes production, consumption and development possibilities in Latin American countries.

- **Glycerine:** 19-p. booklet describes commercial grades, definitions, specifications, test methods, shipping and storage requirements of glycerine. Glycerine Producers' Assn. (New York).

- **Activated charcoal:** Illustrated catalog gives uses of activated charcoal for air recovery, odor removal, air purification, and solvent recovery. Pur Air Division, Barnebey-Cheney Co. (Columbus, O.).

- **Caustic soda handling:** Bound wall chart includes information on safe handling, protective equipment and first-aid treatment in using caustic soda. Westvaco Chlor-Alkali Division, Food Machinery and Chemical Corp. (New York).

- **Industrial chemicals:** 68-p. book describes uses, physical and chemical properties, specifications, shipping, handling, storage methods, and technical service for the company's industrial chemical products. Nitrogen Division, Allied Chemical & Dye Corp. (New York).

- **Steel containers:** 32-p. directory gives addresses of manufacturers' plants and offices, product-manufacturer cross-references, information on container specifications, recommended universal standards, recent developments in container design and coating research. Steel Shipping Container Institute (New York).

- **Drugs.** Book (\$3.50) gives number of drug stores per county, sales for '48 and '54; shows 37 primary areas of wholesale influence. National Wholesale Druggists Assn. (New York).

RESEARCH

Research Costs in the Synthetic Organic Chemical Industry

Year	Number of companies reporting	Number of technically trained researchers*	Salaries paid research workers (thousands)	Total cost (thousands) of research done . . .		
				Within the company		Outside the company
				Gross	Net**	
1946	313	7,527	\$35,791	\$73,376	\$69,412	\$4,249
1947	301	8,707	41,571	90,640	87,825	4,600
1948	303	9,114	43,346	98,729	95,417	4,594
1949	338	8,916	51,521	105,333	100,580	4,996
1950	335	10,529	56,619	115,191	111,374	6,648
1951	353	9,984	67,376	149,607	144,784	6,724
1952	381	12,203	76,701	194,993	186,503	9,603
1953	363	12,208	83,694	210,035	199,829	7,951
1954	388	13,474	94,432	236,524	221,842	9,238
1955	403	14,191	104,804	252,530	234,571	11,614

* For the years 1946-50, a technically trained research worker was defined as a person with technical training engaged in research work and earning not less than \$2,500/year; for 1951-55, the minimum amount of earnings was fixed at \$3,600.

** The net cost figure is obtained by deducting from gross cost the credits for salable products obtained in the course of research.

Stiffer Tab for Organics Research

Chances are synthetic organic chemical makers will be paying a record amount for research this year. That's indicated by the figures above, included in the U.S. Tariff Commission's newest survey report on the industry.† They tell a story of mounting research costs, reflect tightening competition to develop new organic products (as well as the effects of inflation and greater revenue).

According to the report, 403 manufacturing firms accounted for the lion's share of last year's \$5.6 billion sales, laid out close to \$265 million for research (about 85% of the total amount spent by the industry). That's more than triple the expenditure reported in 1946.

Despite this tripling, there's been no change in the ratio of work done by the companies themselves to the research farmed out to universities, private laboratories and consultants.

Researchers' salaries, too, are climbing. The average salary paid in the industry—excluding those making less than \$3,600/year—is up from about \$4,700 in 1946 to \$7,385 last year. Last year, the typical organic researcher could count on finding \$376 more in his pay envelope than the year before. The average 1954 salary of \$7,009, in turn, was \$153 higher than in 1953.

But the Tariff Commission's figures show researchers' salaries are now a smaller part of total research expenditures than in the past. Salaries accounted for nearly half of the 1946 total, made up only \$94 million of the \$236 million spent in 1954. This trend was reversed slightly last year as the wage bill went up (along with the number of research personnel) to \$104.8 million out of total costs of \$252.5 million.

Data Bonus: Pulling together facts and figures on research workers and research expenditures in the synthetic organic chemical industry is one of the more unusual jobs performed by

the U.S. Tariff Commission's small coterie of chemical experts, headed by veteran government careerist James Hibben.

Since 1938, such data has appeared as a bonus to readers of the commission's annual report on the production and sales of synthetic organic chemicals and the raw materials from which they are made. Comments the commission: "This information on research spending and personnel is not available elsewhere."

The most recent in the series—the 39th issued so far, including one thick volume for the war years 1941-42-43—is a 187-page compilation of data furnished by 626 primary manufacturers of organic chemicals. It also includes an analysis of U.S. Customs Office invoices of coal-tar products. The latter are summarized in the annual report, given in more detail in an earlier separate report, "Imports of Coal-Tar Products," available directly from the Tariff Commission. The annual report itself is not sold through the commission (see footnote).

† Synthetic Organic Chemicals, United States Production and Sales, 1955 (Tariff Commission Report No. 198, second series). Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price: 65¢.

Mono Stearates Di

of
Diglycol
Ethylene Glycol
Diethylene Glycol
Polyethylene Glycol
Propylene Glycol
Polyoxyethylene
Butoxyethyl
Glycerine

MADE TO MEET YOUR SPECIFICATIONS



THE FLAME AND THE FLASK—SYMBOL OF QUALITY

The C.P. Hall Co.
CHEMICAL MANUFACTURERS

5147 W. 67th Street, Chicago 38, Illinois

AKRON, OHIO

NEWARK, N. J.

CHICAGO, ILL.

LOS ANGELES, CAL.

RESEARCH

'Live-Virus' Venture

Prisoner volunteers at the Chillicothe, O., Federal Reformatory will reportedly be the next test subjects for the newest version of "live virus" polio vaccine. But according to Albert Sabin, who developed the vaccine (*CW Technology Newsletter*, Oct 13), the tests may not begin until next year.

The vaccine—which uses a "highly attenuated" virus and is designed to be mixed with fruit syrup and swallowed—is still very much in the experimental stage. If successful, it will be the first oral polio vaccine to include all three major types of virulent polio, could take a lot of play from Salk vaccine, which is costly, must be administered by injection.

Sabin, professor of research pediatrics at the University of Cincinnati, expects "live virus" vaccine to produce long-term (perhaps even lifetime) immunity against all three important polio types.

Moreover, he says, the vaccine (made from monkey kidney cultures) should be inexpensive. That's largely because only minute amounts of the vaccine are needed to provide immunity. One estimate: 20 liters would be sufficient for 2 million vaccinations. Implication: polio may cease to be a threat as an epidemic disease.

Until now, researchers have been able to develop one-dose orally administered polio vaccine against only two of the three major polio types. Lederle Laboratories (Pearl River, N.Y.) has tested such a vaccine on humans, found it effective. Lederle, however, is not going to make Sabin's new vaccine—is thought to be developing a three-type polio vaccine of its own. Sharp & Dohme, division of Merck, is believed to be ready to pilot-plant the Sabin vaccine, but the firm won't comment on the report.

Oral vaccines haven't come sooner largely because of the problem of isolating only the least-active strains of the three polio viruses. These relatively inactive viruses produce immunity without causing paralysis and other physiological damage. Last year, scientists at the California Institute of Technology (Pasadena) worked out a technique of obtaining a single "weak" polio virus particle, setting the stage for the new vaccine.

Just when the oral polio vaccine will



SABIN: For his oral polio vaccine, widening tests.

become established in medical practice is hard to say. The National Foundation for Infantile Paralysis, which has supported Sabin's research with \$1 million in grants over a 10-year period, hasn't as yet granted permission for field trials of the new vaccine—adding that this doesn't preclude Sabin's testing the vaccine on his own. Before the foundation will finance such tests, data must be submitted to its advisory committee, which hasn't met since last spring. This committee evaluated tests on 10,000 persons before approving the 1954, nationwide evaluation of Salk vaccine. If the Sabin vaccine proves out, it's not likely that the foundation would recommend it over the Salk vaccine, or vice versa.

Prospering Nonprofits

Nonprofit research institutes and commercial laboratories both have healthy growth prospects, according to a new National Science Foundation survey (*CW Technology Newsletter*, Oct. 6). Together they did about \$85 million worth of applied research in 1953 (the survey year), employed about 5,000 scientists and engineers.

Prepared by the Maxwell Research Center at Syracuse University, the report* is part of an over-all NSF survey of the country's research and development effort, spotlights an in-

*Titled "Research and Development by Non-profit Research Institutes and Commercial Laboratories, 1953," it may be obtained from the Superintendent of Documents, Washington 25, D.C., for 50¢.

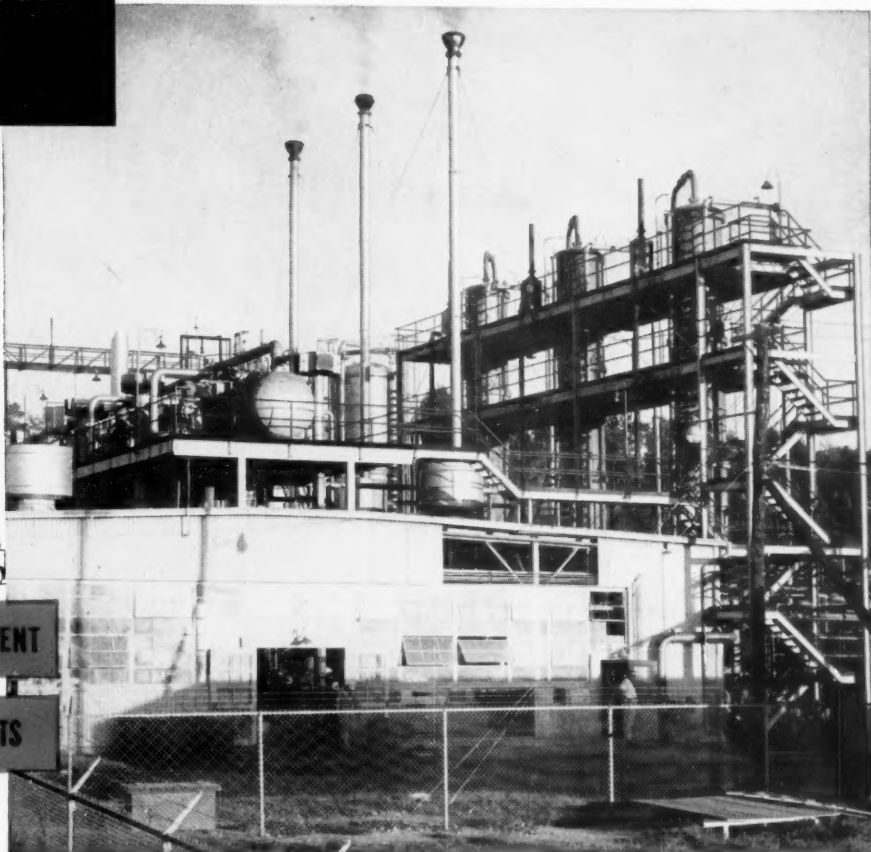
NITRIC ACID PLANTS

Girdler nitric acid plants employ the well-known Du Pont process, using high-pressure catalytic oxidation, to produce nitric acid. These plants offer greater economy, in both investment and operating costs, than atmospheric or low-pressure units. With the high-pressure process 55%-60% nitric acid is produced with efficient use of catalysts, and with lower utility requirements.



LOWER CAPITAL INVESTMENT

LOWER OPERATING COSTS



How you save money with **GIRDLER** know-how

WHEN you come to Girdler for nitric acid facilities, you get the benefit of the vast experience of DuPont as well as Girdler. DuPont's agreement with Girdler has combined the know-how of both companies. Moreover, Girdler has unsurpassed experience in building plants for the production of ammonium nitrate.

Because of this experience and new Girdler developments in nitric acid plants, you are assured substantial savings in capital investment and in operating costs when you specify Girdler. Mail coupon for bulletin on Girdler nitric acid plants.

**MAIL COUPON
TODAY FOR
HNO₃ BULLETIN**



THE GIRDLER COMPANY
224 East Broadway
Louisville 1, Kentucky

Please send copy of new Bulletin on Girdler Nitric Acid Plants.

Company _____

Address _____

City _____ Zone _____ State _____

My Name _____

My Position _____

The **GIRDLER** *Company*

A DIVISION OF NATIONAL CYLINDER GAS COMPANY

LOUISVILLE 1, KENTUCKY

GAS PROCESSES DIVISION: New York, San Francisco.

In Canada: Girdler Corporation of Canada Limited, Toronto



Cyanoacetic Acid is an intermediate for amino acids, barbiturates, dyes, the purine group, vitamins and other drugs. Chemically, its "cyano-activated" methylene group and easily hydrolyzed cyano group are particularly interesting.

KAY-FRIES SPECIFICATIONS

assay • 98.0% min. (by acidity and hydrolysis) Kay-Fries CYANO-ACETIC ACID is exceptionally uniform in purity with water accounting for substantially all of the remaining 2.0%.

color • 75 Hazen scale (10 g. of acid in 50cc dist. H₂O).

ash • .075% maximum.

Typical reactions of CYANOACETIC ACID

ESTERIFICATION



AMIDATION



CHLORINATION



HYDROLYSIS



REDUCTION



CONDENSATION



TECHNICAL BULLETIN AVAILABLE

Write or Phone

American-British Chemical Supplies, Inc.

Selling Agents For



KAY-FRIES CHEMICALS, INC.

180 Madison Avenue, New York 16, N. Y. •

Murray Hill 6-0661

RESEARCH

creasingly important segment of this activity.

Says NSF, "The majority of the commercial laboratories and non-profit research institutes were founded since 1941. This rapid increase can be accounted for largely by the swift expansion of the federal government's research programs, particularly those of the military departments."

Furthermore, NSF reveals there is little significant difference between the nature of research done by the two types of organizations. Both are oriented toward solving specific practical problems. However, industrial (rather than government) projects get a larger fraction of the commercial laboratory budgets.

During 1953, commercial laboratories spent about \$35 million on applied research, \$4 million more for basic studies (of which \$950,000 went for chemical research). Government contracts accounted for about half of the applied research expenditures; industry accounted for the remainder—except for a small portion (roughly 4%) derived from trade associations, foundations, universities, etc.

Nonprofit research institutes spent more than \$50 million on research and development, added \$3 million for basic research. But the government contracted for about twice the volume of research and development financed by industry. Income from grants, gifts and other sources, such as endowments, was negligible.

Competition: NSF sees little competition between the two types of laboratories, reports that "commercial laboratories experience the severest competition from large industrial concerns, which maintain their own laboratories." It does concede, however, that a few laboratories reported competition with some nonprofit institutes. Among themselves, commercial laboratories compete in bidding on government contracts, but experience less competition in industrial work (where a particular industry tends to become a steady client). "In the rivalry for industrial business," explains NSF, "commercial laboratories compete on the bases of service and quality, while for government work they compete mainly on the bases of cost and price."

Nonprofit research institutes, according to the survey, "are not competitive organizations from the business point of view."

"With previous forms of linings, we had to carefully screen every one for pin-holes, tears or streaks in the lining, before delivery. Men could often be tied up for hours in inspection. By using polyethylene film bags for liners, we eliminate this inspection operation." Liners are supplied by **M. J. Earle Suppliers**, Reading, Pa., and **Greene Manufacturing Company**, Philadelphia, Pa.

*"the tough
polyethylene
drum liner*



prevents acids from attacking the iron"



Drum liners made of **BAKELITE Brand Polyethylene** "have solved the hitherto serious problem of maintaining the viscosity of paint and latices during shipping and storage."

John P. Harner, Glidden Company, Reading, Pa., further reports: "The polyethylene film liner is durable, chemical resistant, water resistant, easy to work with, requires no attention or pre-shipping inspection, maintains the complete viscosity of our paints, has an excellent storage stability, is tough and flexible, protects paints from being contaminated by rusting of the containers, and, above all, assures us of a safe delivery."

"A paint's viscosity affects its uniformity of color, application characteristics, consistency and drying properties. Any deviation from the norm becomes a serious and expensive problem. However, we have found that material stored in this polyethylene lining for an indefinite period is as stable as the day it was put in."

Film and other packaging made of **BAKELITE Polyethylene** may well offer you outstanding cost savings for shipping or storing chemicals. See your packaging supplier or write Dept. UO-34.

*It pays to package
in materials made with*



BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation UCC 30 East 42nd Street, New York 17, N. Y.

The term **BAKELITE** and the Trefoil Symbol are registered trade-marks of UCC.

NEW.....

HUDSON



1

2

*Write today for full
details on this
better, faster pack.
Address Dept. 310*

MULTIWALLS

SEAL-O-MATIC SLEEVE

Pat. Pend., Trademark

SEALS PERFECTLY—IT CAN'T SIFT

CLOSES AUTOMATICALLY

Here it is. The completely automatic, self-sealing closure that puts an absolute stop to sifting. Hudson's new and exclusive Seal-O-Matic sleeve has been thoroughly tested in actual plant use. Its advantages are obvious for many products:

- ✓ **WILL NOT SIFT.** Not only does this give customers full measure. It makes for cleaner, more comfortable handling.
- ✓ **SAVES TIME ON THE FILLING LINE.** Your line flows more evenly. No manual tuck-in is required. Your workmen will prefer this improvement, at the same time speed production.
- ✓ **REDUCES MESS** in packing and handling; eliminates it in storage and shipping.
- ✓ **PREVENTS CONTAMINATION.** Just as contents can't get out, dirt can't get in.
- ✓ **MAKES A NEATER CLOSING.** It's smoother; gives you a more attractive pack.

HUDSON PULP & PAPER CORP.

477 Madison Avenue • New York 22, N. Y.

Plants at: PALATKA, FLA. • PINE BLUFF, ARK. • WELLSBURG, W. VA.



STEEL PAILS AND DRUMS **NOW** VULCAN SHIPS IMMEDIATELY



These Sizes Steel Pails
and Drums Available

**1-1½-2-2½-3-3½
4-5-6-6½-7-8-9
10-12 and 15
gallons**

Whether you order a carton, truckload, carload or mixed combinations in the sizes shown, you can depend on Vulcan to ship promptly.

Many buyers find Vulcan's prompt delivery helps them keep container inventories at a minimum . . . no need to keep big stocks of containers on hand to meet production schedules. They order containers when needed . . . *in any quantity*. Vulcan gets them there in time!

Vulcan's tremendous warehouse stock in all styles and sizes steel pails and drums makes this possible . . . for Vulcan's sole interest is in manufacturing the finest in steel containers.

Vulcan's complete selection of all types nozzles and pouring spouts plus protective interior linings . . . wide choice of container colors . . . expert label design and lithographing facilities makes Vulcan your best source of supply.

So check Vulcan on your next container order. It could pay you in time and money saved!

over 40 years container experience

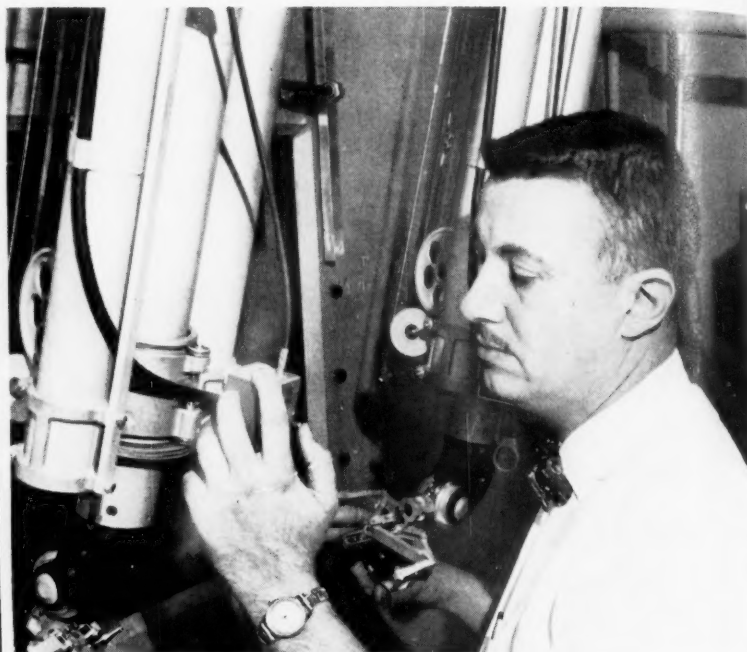
VULCAN

CONTAINERS, INC.

Bellwood, Illinois (Chicago Suburb)
Phone: Linden 4-5000

In Toronto, Canada—Vulcan Containers Ltd.
Representatives in All Principal Cities

RESEARCH



BUDD'S STEVENS: For radiation researchers, wider scope.

Radiation—Cut to Measure

Tailor-made radioactive sources will soon be available—for the first time commercially—from the Budd Co.'s new Nuclear Systems Division (Philadelphia).

Although some chemical process firms have procured radiation sources from the Atomic Energy Commission (e.g., Brookhaven National Laboratory supplied Esso with a 3,100-curie source of cobalt 60), Budd feels it can still do a nice piece of business with the many companies that are uncertain about how to get a radiation research program started. To them, Budd says, it offers an opportunity to use a new research tool.

Specifically, Budd's Nuclear System Division offers to:

- Supply any type of radioactive source fabricated in any shape containing any radioisotope normally available from Atomic Energy Commission. These radioactive sources, varying in activity from 1 to 150 curies, will be built up in the firm's radiation facility to potent gamma-ray sources—up to 10,000 curies—in the desired shape.

- Design and supply shielding and exposure equipment, including equipment for shipping, storage and con-

tainment of the radioactive source.

- Supply instrumentation for custom installations, e.g., radiation and detection control devices.

- Provide engineers who will train customer's staffers and serve as consultants.

- Fabricating will be done in Budd's radiation facility, a radiation-proof "cave" equipped with master slave manipulators, close-circuit television, and the fabricating machines. The firm will also expose materials—e.g., rubber and plastics—to a cobalt-60 source so the customer can study irradiation effects.

Spark Plug: Driving force behind Budd's new services is Arthur Stevens, manager of the Nuclear Systems Division. Former head of the Gamma Corp. (a company whose assets Budd acquired about 15 months ago, and which formed the nucleus of the new division), Stevens has long seen the need for a radiation fabricating service. But he lacked capital until his firm was taken over by Budd.

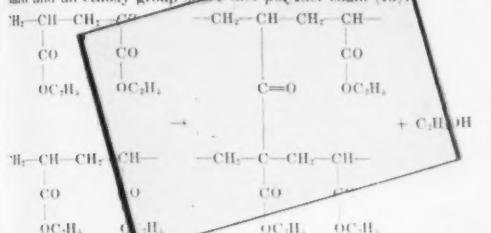
Stevens feels his package deal will ease many headaches for a prospective radiation researcher. As he sees it, the researcher has to figure out just what kind of a radiation field is required to

ACRYLIC-MODIFIED PLASTIC

MONOMERIC ACRYLIC ESTERS

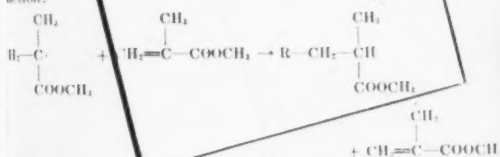
mutual termination of two of these big, bulky radicals by combination then form a crosslinked polymer. Such a branching process results in the crosslinking of two polymer chains undoubtedly occurs in the reaction of other vinyl monomers. The greater tendency for this to lead to gelation in the acrylates is due largely to the greater length obtained in the polymerization of these monomers. The high molecular weights of soluble polymer obtained even at low conversions also indicate that branching via chain transfer with the monomer is unimportant (9, 11). This gelation can be prevented by the addition of chain transfer agents such as mercaptans (see page 56) to reduce the primary length.

In connection with the above mechanism for crosslinking of polyacrylates, of interest is the "vulcanization" of polyacrylates by means of alkali materials such as sodium metasilicate and lead oxide. This has been attributed to a Claisen type condensation involving the α -hydrogen of one polymer chain and an ethoxy group of another polymer chain (13):



Using sodium silicate on ethyl polymethacrylate, which the α -hydrogen is absent, shows no vulcanization.

Similarly, in the polymerization of a methacrylate ester the above mechanism of chain transfer is impossible because of the absence of the α -hydrogen. As an alternative, the growing radical might be able to abstract a hydrogen atom from the α -methyl group of the monomer in a chain transfer reaction:



WEATHER-OMETER DURABILITY

1000 HOURS

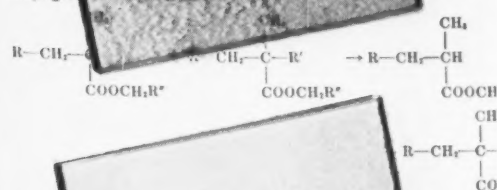
500 HOURS

0 HOURS

UNMODIFIED PLASTIC

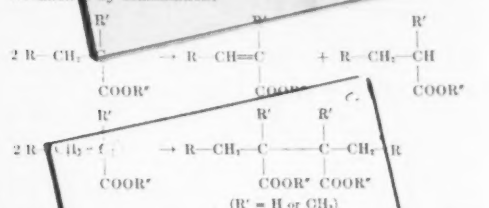
POLYMERIZATION OF ACRYLIC ESTERS

However, the value of the chain transfer constant for this reaction is low (approximately 10^{-4}), indicating that the reaction is of very little importance (14). For the same reason, the probability of a transfer reaction above one between a chain radical and a "dead" polymer chain is small. On the other hand, polyacrylonitriles have been obtained under the bulk polymerization conditions which were considered to be common, although highly swollen by some of the solvents, indicating some linking (15). This might result from a chain transfer reaction with the alkyl group in the polymer.



The radical formed by chain transfer could then go on to form a radical which, as in the case of the acrylates, could form a cross mutual termination with another branch radical.

There has been considerable controversy as to whether the bimolecular termination reaction involving two polymer radicals occurs by disproportionation or by combination:



Evidence has been obtained for both mechanisms (13), and the acceptable theory at present is that both reactions do occur. With methacrylate at 25°C., evidence has been obtained that disproportion is the dominant reaction (15b). Further investigation of these termination reactions are underway with methyl methacrylate and with other monomers.

For plastics with built-in old age benefits

... copolymerize with Rohm & Haas Acrylic Monomers



A small amount of acrylic monomer makes a world of difference in the performance of a plastic, as the samples above show. Exposed for equal periods in a Weather-Ometer, the performance of the acrylic copolymer against heat and light speaks for itself.

Copolymers can be formed readily with the acrylic monomers and vinyl chloride, vinyl

acetate, vinylidene chloride, acrylonitrile or styrene. The primary chemical bonds which are formed mean that the acrylates cannot be extracted by even the strongest solvents, cannot migrate or volatilize; that copolymers remain tough and flexible. How can acrylic monomers make your product better? Our detailed booklet may hold the answer.

ROHM & HAAS ACRYLIC MONOMERS

Methyl acrylate	Ethyl methacrylate
Ethyl acrylate	Hexyl methacrylate
Butyl acrylate	Decyl-octyl methacrylate
2-Ethylhexyl acrylate	Lauryl methacrylate
Methyl methacrylate	Stearyl methacrylate
Butyl methacrylate	Glacial methacrylic acid
Glacial acrylic acid	



Chemicals for Industry

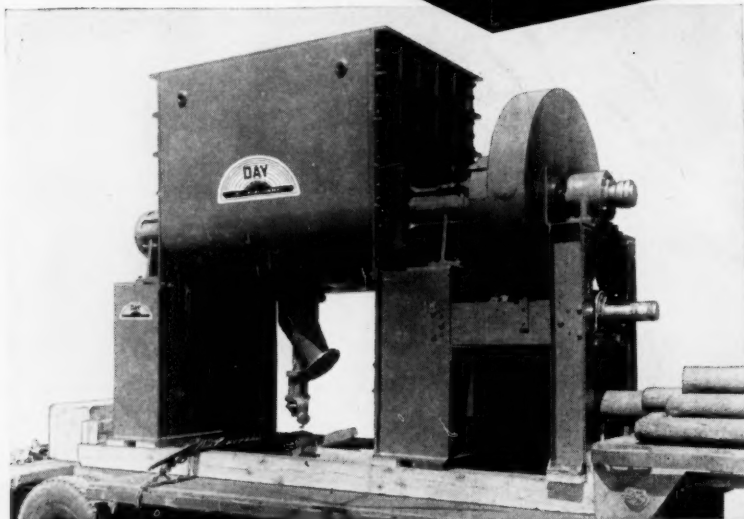
**ROHM & HAAS
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

NOW!

10-20% binder savings
Continuous operation
Grit-free coatings



DAY CLAY MIXER the most advanced design available anywhere, has a record of productivity that is virtually unequalled. A service story from a large paper company, testified that a Day Cincinnati Clay Mixer dispersed within 60 minutes a 75% solids, clay mix, into a homogenized product, with binder savings averaging 10 to 20%.

The tremendous, power-packed mixing action of heavy steel, dispersion contoured agitators, working the batch against itself as well as against tank bottom, sides, and ends, rapidly pressures the binders and wetting agents into the pigments. The result is a smooth gritless coating that will meet both you and your customers higher standards.



Unretouched photo of 75% solid clay mix used in test.

Ruggedly built, precisely engineered, for 24 hour operation the Day mixer is available in 5, 200, 350, 550, 660, 1000 gal. pasting capacities. Get full details in Data Sheet No. I-300 CM, then let a Day field engineer tell you about higher production, dollar savings with a Day Cincinnati Mixer.

in mixing equipment



means longer life span

THE J. H. DAY COMPANY

4932 BEECH ST., NORWOOD, CINCINNATI 12, OHIO
Division of Cleveland Automatic Machine Company

Quality equipment for baking, paint and varnish, printing ink, chemical, rubber, pharmaceutical, cosmetics, paper and pulp, explosives, food, ceramics, candy, soap, sugar and milk products.

Eastern Canada: Brantford Oven & Rack Co., Ltd., Brantford, Ontario
Mexico: T. de la Pena e Hijos, S.A., Nazas 45-A, Mexico 5—D.F.

RESEARCH

do the job (strength and shape of the source depend on each application). Then he needs a special container to prevent the source from becoming damaged during handling. This takes more design work.

Also, says Stevens, he has the problem of transporting the material. And after that, there's the task of unloading and transferring the hot material into the firm's radiation facility. All this, he declares, calls for radiation-handling know-how, which many companies are loath to acquire.

Why not first fabricate the source into the desired shape, then irradiate it in the reactor? You can't do this, says Stevens, because you're limited by the size and thickness of material that can be put into the reactor. Too thick a piece causes a "neutron sink," which means an excess of neutrons is taken out of the reactor in that spot, and the section goes dead. Thus, only relatively thin sections can be irradiated.

In looking ahead, Stevens sees the new service expanding the scope of radiation research, but cautions that radiation in commercial chemical processes is still a long way off.

EXPANSION

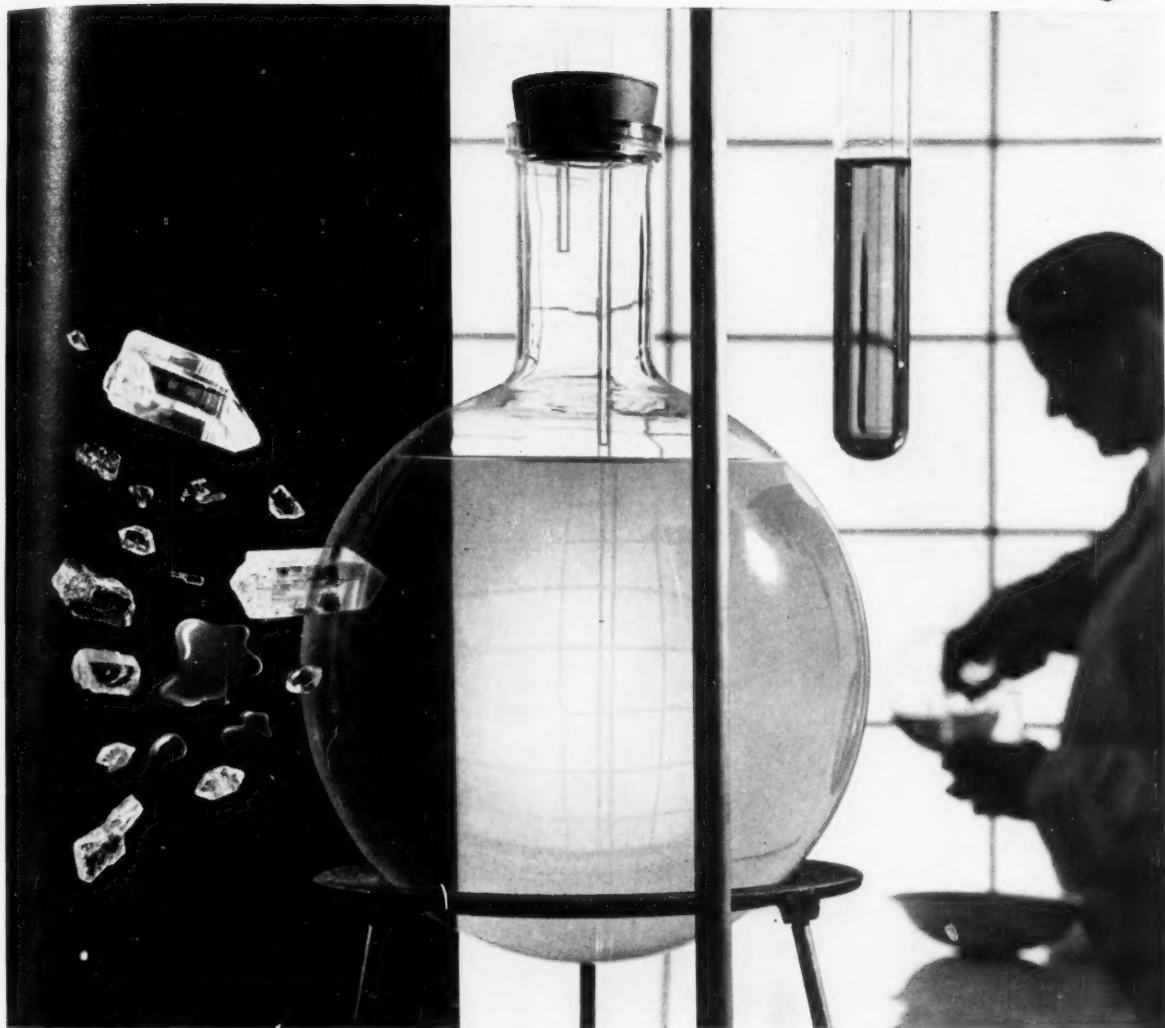
- Du Pont plans to construct a \$500,000 addition to its Elastomers Laboratory at Chestnut Run, Del., will stress urethane-foam application research.

- Continental Oil Co. (Houston, Tex.) will soon start construction on a \$500,000 atomic radiation laboratory, at Ponca City, Okla. The radiation research will utilize fuel elements from AEC's atomic energy plant at Arco, Idaho.

- Gulf Oil Corp. is building an addition to its Harmarville, Pa., research center to study hydraulic fracturing and thermal recovery of oil.

- Construction will start this month on Thompson Products' (Accessories Division) new, \$10-million engineering and development center near Roanoke, Va. It's to be used for testing fuel and auxiliary power systems in rockets and missiles.

- Carbide and Carbon Chemicals Corp. (division of Union Carbide and Carbon Corp.) plans to build a new addition to its development laboratory at Niagara Falls.



DOW ETHYL BROMIDE makes chemical synthesis easier

in the laboratory and in production, this important intermediate has many useful applications

Dow ethyl bromide is a valuable ethylating agent. Here's a convincing reason why: Dow ethyl bromide requires less drastic conditions for the chemical synthesis of many organic chemicals, including drugs. It is effective at a significantly lower temperature or pressure than is usually required by other ethylating agents.

That's why you'll find Dow ethyl bromide a big help, whether you use it in the lab or in production. Fifty-six years of Dow experience with the development of bromine means two important things: You can depend on Dow ethyl

bromide's quality . . . you can depend on a continuous supply. For more information on Dow ethyl bromide or any of the bromides listed below, write THE DOW CHEMICAL COMPANY, Dept. 11001D-1, Midland, Michigan.

OTHER TYPICAL DOW BROMIDES:

Isopropyl bromide	2,4,6-Tribromophenol
Bromoform	Amyl bromides
Allyl Bromide	Butyl bromides
Trimethylene chlorobromide	Trimethylene bromide

you can depend on DOW CHEMICALS

DOW





Should a chemical manufacturer take chemical distributors into his confidence?

Why not?

Distributors are not interested in experiments or top-secret government work.

Distributors want to know what products a manufacturer has that will be of help to his customers. What advantages, if any, the products possess. How to handle them. How to use them. How to store them. And how the manufacturer can help the distributor sell them to advantage. They want to know, too, what's new (at least a few days before the public announcement).

Simple, isn't it? Comes under the heading of good communications. Yet, some manufacturers treat such items as military secrets.

Because Wyandotte believes good communications are only good business, Wyandotte distributors receive data sheets, application information, reprints of advertisements, new-product announcements, and other sales aids as soon as they originate.

(The welcome mat is always out for Wyandotte distributors and their customers at our Research Center, too, when they need help on their problems.)

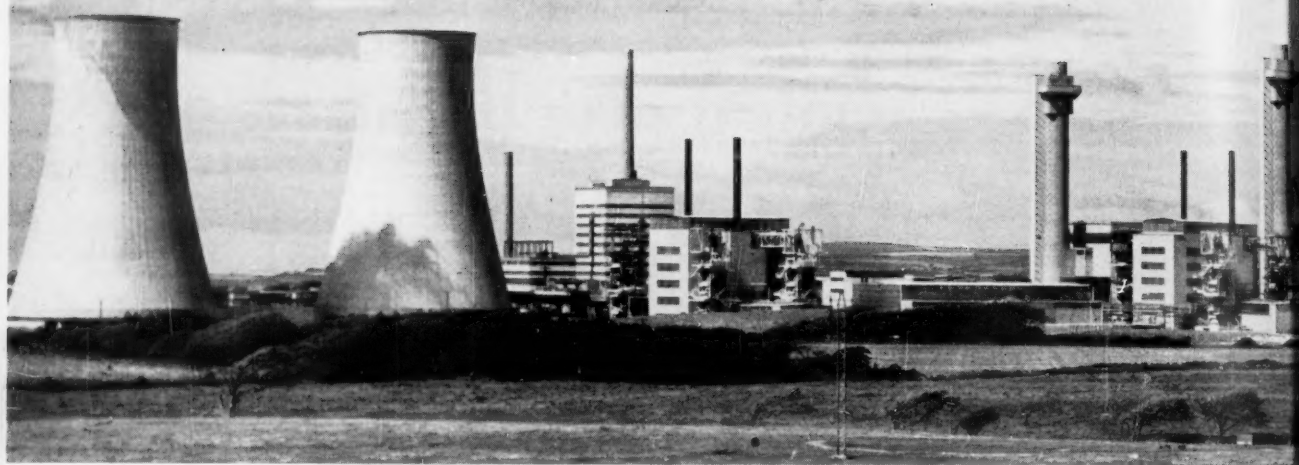
Thus, Wyandotte distributors are always well informed. They are well informed on Wyandotte's distributor policy, too, because it's clear-cut and written down. We would be happy to discuss it with you.

Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION

WYANDOTTE CHEMICALS CORPORATION, WYANDOTTE, MICHIGAN

Offices in Principal Cities



CALDER HALL: Twin cooling towers (left), massive reactor housings dominate scene as . . .

Curtain Goes Up on Nuclear Power

A desolate Cumberland plain on the northwest coast of England is the setting this week for the world premier of commercial-scale atom-derived electric power.* Electricity from the Calder Hall station will start coursing into the national grid attended by all the pomp and ceremony that Britain reserves for historic occasions—the Queen will throw the switch.

The Calder Hall start-up is the first step in a 20-year atomic power program that Britain hopes will provide enough electricity to maintain expansion of power capacity in the face of the nation's dwindling coal production. And even though this initial installation will contribute relatively little (92,000 kw. at full capacity) to total power production, it's a vital proving ground for the commercial development of nuclear power. At least 8 of the 12 nuclear plants which the

Central Electric Authority will build over the next 10 years will be based on the Calder Hall station.

The reactor system used at Calder Hall is of the same type as that chosen for plutonium production piles at the adjacent Windscale plant (*CW*, March 24, p. 48). Graphite-moderated, gas-cooled and fueled with natural uranium, it was, in the opinion of British scientists, the only system inherently safe enough for use in a country so densely populated.

One of Calder Hall's twin reactors has already gone critical; the other is close to the critical stage. Twenty tons of carbon dioxide circulated under 100-psi. pressure transfer heat from the reactor cores to heat exchangers in which Calder River water is converted into steam. From that point on, conventional power generating equipment (four standard 23,000-kw. turbo alternators) is employed to convert the steam into electricity.

Economic Enigma: Because Calder Hall is a prototype designed primarily for plutonium production, electricity

is only a by-product and generation is admittedly inefficient. Design considerations were necessarily a compromise between optimum conditions for plutonium production on one hand and for maximum heat generation on the other. Too, construction problems dictated physical restrictions that limit the recovery of heat to about 1/4 of that available in the reactor cores.

The huge write-off to plutonium production (Britain's Atomic Energy Authority bore the entire cost of the \$56-million plant) and the high value of this product—\$14-28/gram—makes it all but impossible to arrive at a cost figure for Calder Hall power. But taking conservative costs all around, AEA estimates that efficient graphite-moderated systems of 200-300-mw. capacity will be able to turn out power for 5-7 mills/kwh. That's at least as good as the country's best coal-fired stations can do on domestic coal at \$11.20/ton; better than they can do on U.S. coal at \$28/ton.

Capital costs of nuclear power stations of the CEA type will be about

*First nuclear power sold in U.S. was generated in General Electric's S1R (prototype reactor for the submarine *Seawolf*), was purchased at 3 mills/kwh. by Niagara Mohawk Power Co. First large-scale nuclear plant in U.S. will be the AEC-Duquesne Light Co. PWR (Shippingport, Pa.), due to start up next year.

Oronite*
ISOPHTHALIC

**offers unusual reaction
and performance properties**

HOOC

**For protective coatings — industrial, interior and exterior
architectural paints and baking finishes**

Reacts more completely

Makes harder, more flexible films

Produces tougher films

Better thermal stability

Permits using more low cost oils

Better gloss and gloss retention

Odorless

Minimizes fume problems

**For plastics — polyesters, polyamides, polyester-amides,
reinforced plastics of unsaturated polyester type**

Provides full molecular weight

range of linear and cross

linked polymers

New melting point characteristics

Higher polymers are formed

A lower cost raw material

Greater strength

and adhesive properties

For plasticizers — poly-vinyl chloride and other fields

Greater thermal & color stability

Higher boiling points

Better resistance to oxidation

Greater plasticizing efficiency

Lower volatility

Less toxicity and no odor

Users of ISOPHTHALIC are fast discovering this new Oronite chemical offers properties and cost advantages heretofore unobtainable. If you haven't inquired about or investigated Isophthalic in your own laboratory, it will pay you to do so. Technical data is available on many of its unique properties. Contact the Oronite office nearest you for complete information.

*T.M.

ORONITE CHEMICAL COMPANY

EXECUTIVE OFFICES: 200 Bush Street, San Francisco 20, California
SALES OFFICES

450 Mission Street, San Francisco 5, Calif. Mercantile Securities Building, Dallas 1, Texas
30 Rockefeller Plaza, New York 20, N. Y. Carew Tower, Cincinnati 2, Ohio
20 North Wacker Drive, Chicago 6, Illinois 714 West Olympic Blvd., Los Angeles 15, Calif.

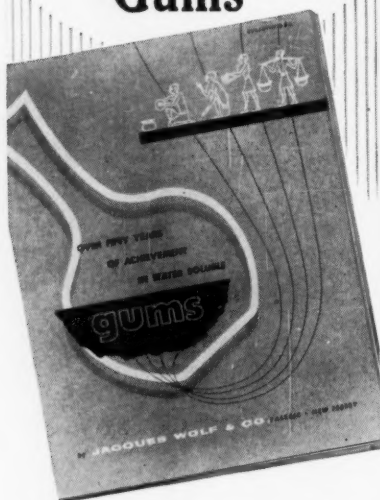
EUROPEAN OFFICE

26, Avenue William-Bove, Geneva, Switzerland

Now Available!

FASCINATING BOOKLET

"The Story of Water Soluble Gums"



From strange and exotic countries come the natural gums which are in greatest demand in modern America. Gum Arabic, Tragacanth, Karaya, Irish Moss, and Locust Bean... some transported half way around the world to you by Jacques Wolf & Company, direct importers of gums for over 50 years.

The fascinating story of the history, characteristics, and uses of these famous gums is presented in the booklet "The Story of Water Soluble Gums". Jacques Wolf & Company is happy to again offer this booklet as a service to all users of chemicals without obligation.

5964

JACQUES WOLF & CO.
Chemicals PASSAIC, N.J.

Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.

WRITE JACQUES WOLF TODAY!

Jacques Wolf & Co., Passaic, New Jersey

Please send me your Booklet, "The Story of Water Soluble Gums", without obligation, of course.

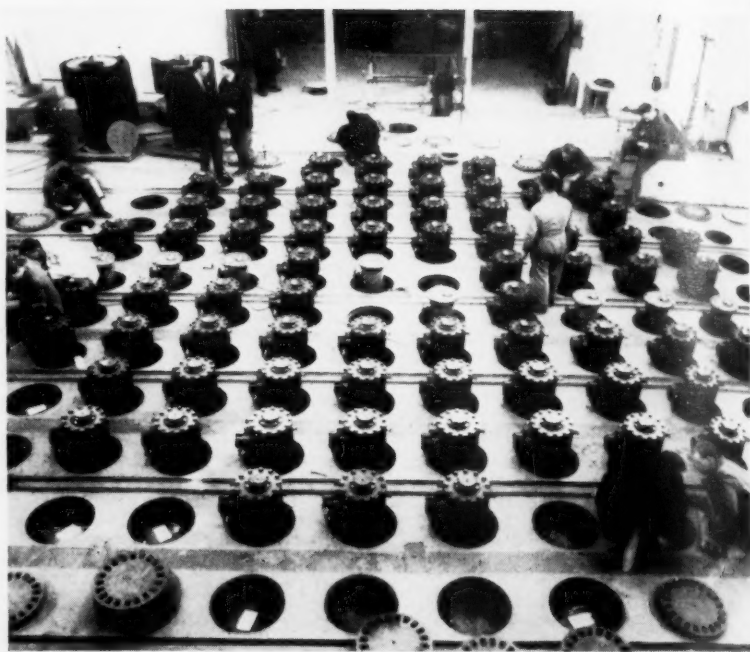
Name.....Title.....

Firm.....

Address.....

City.....Zone.....State.....

PRODUCTION



ROOF of reactor is studded with tubes that admit fuel to the core.

2½ times as high as those of conventional plants. Typical costs for a 150,000-kw. installation: reactor, \$22 million; steam plant, \$25.2 million; engineering, \$6.7 million; fuel charge, \$14 million; total, \$480/kw.

Future Fuel: Successors to the 12 Calder Hall-type stations are already at the design stage in the second phase

of Britain's nuclear power program. The newer types will be sodium- or water-cooled and, like their predecessors, will produce plutonium.

If nuclear power breeders live up to AEA's expectations, by-product plutonium may go a long way toward making up for the foreseeable deficit in Britain's coal supply.



BASEMENT of plant has maze of pipes to feed steam to turbo generators.

Domestic Titanium On the Way?

Titanium producers will be less dependent on imported rutile ore supplies if the Bureau of Mines' current attempt to tap low-grade domestic sources pays off. In cooperation with General Services Administration, the bureau's Northwest Electrodevelopment Experiment Station (Albany, Ore.) is seeking a new route to titanium tetrachloride via smelting of domestic ilmenite and titaniferous magnetite.

To date, the bureau has run tests on tonnage lots of ilmenite from Idaho, Florida and South Carolina, is readying trial runs with New York ilmenite and Wyoming magnetite.

The smelting technique* under investigation is carried out in an open-top, submerged-arc three-phase electric furnace. An essential feature is the use of a porous furnace charge having a low bulk density. The use of hogged fuel or wood chips as a major portion of the reducing charge has been found satisfactory, permits the charge to attain temperatures that are high enough to assure fluidity of the slag when tapping (at 1650-1700 C).

Early tests in a 32-in.-diameter furnace with an electrical input of 250-300 kw. yielded slags that ranged in titanium dioxide content from 80 to 84%. Current tests in a 400-kw., 46-in.-diameter furnace improved smelting performance, yielded slags containing 90% or more TiO_2 .

Under good operating conditions, reports the bureau, practically all the TiO_2 is recovered in the slag. Ilmenite's feed rates ranged from 450 to 550 lbs./hour; average electrical energy consumption was 2,327-3,345 kwh./ton of contained TiO_2 .

Slags produced at Albany are being chlorinated in a prototype chlorinator at the Electrometallurgical Experiment Station (Boulder City, Nev.).

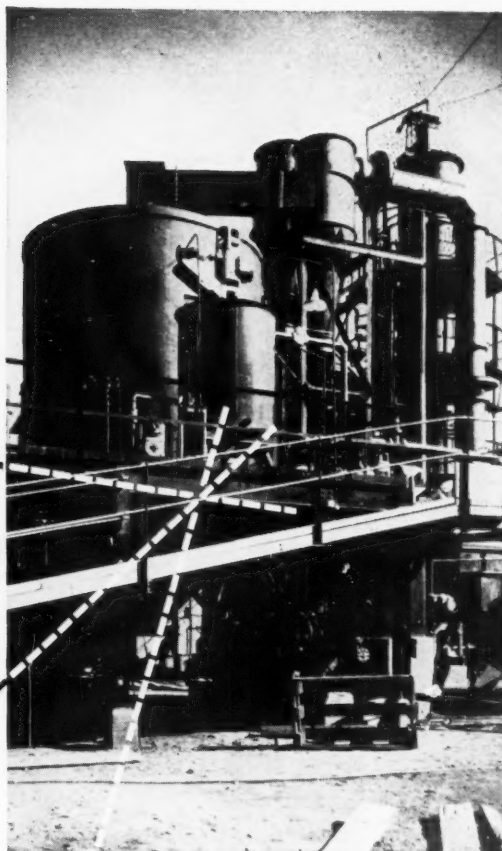
Utilization of domestic titanium ores has always been an economic rather than a technological problem. Several firms have made headway in adapting chlorination processes to Sorel slag (*CW Technology Newsletter*, Aug. 11). The groundwork laid by this type of processing, together with the Bureau of Mines' latest efforts, could add up to a bonanza for domestic titania.

*Described in Mines Bureau's Report of Investigations 5170.

IN
SOUTH
AFRICA

AROUND
THE
CLOCK

A
TANK CAR
AN HOUR
OF H_2SO_4



This FluoSolids System at West Rand Consolidated Gold Mines, Ltd. on South Africa's fabulous Witwatersrand was started up early in 1952. The first of several to go into operation on the Rand, it was also the first in the world to combine FluoSolids roasting of pyrite with a contact acid plant.

Over 1650 tons of H_2SO_4 — enough to fill twenty-four tank cars — are being produced every day for uranium leaching at seven South African mills.

An important part of each of these installations is a Dorrcol FluoSolids System. Cumulatively the Systems include nineteen Reactors, of which sixteen were on original order and three on repeat orders, plus additional Dorrcol Oliver and auxiliary equipment to produce a high strength SO_2 gas for acid manufacture by conventional contact acid plants.

Total feed to the Systems is 1450 tons per day of pyritic gold mill tailings — averaging 35 to 45% total sulfur, gas production is 75,000 to 82,000 SCFM. Gas strength averages 12 to 13% SO_2 . . . sulfur recovery approximately 90%.

The efficiency and economics of the Dorrcol FluoSolids System is in evidence in these facts. Additional representative proof that the FluoSolids process can produce an SO_2 gas at lower investment and operating costs than other roasters.

If there's a step in your flowsheet where intimate contact between solids and gases is essential, fluidization should be investigated. Just drop a line to Dorrcol Oliver Incorporated, Stamford, Connecticut.

FluoSolids is a Trade Mark of Dorrcol Oliver Incorporated, Reg. U. S. Pat. Off.



DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U. S. A.

PITT-CONSOL

Ortho Cresol

"LET'S TALK
'TURKEY'
ABOUT YOUR
ORTHO CRESOL
SUPPLIES!"



If assurance of quality and escape from an up-and-down supply situation are important to you in your ortho cresol purchases, then you'll want to specify PITT-CONSOL on your next order! For PITT-CONSOL is the *new* symbol for uniform, top quality and reliable, continuing supplies of ortho cresol, regardless of gyrating marketing conditions. Consider these important PITT-CONSOL advantages:

QUALITY . . . assured by a new production process developed from years of research in coal carbonization and tar refining . . . and controlled by the latest analytical methods.

VOLUME . . . assured by unlimited supplies of raw materials.

DEPENDABILITY . . . assured by the resources of the nation's largest company in the commercial coal industry.

DELIVERIES . . . made promptly through easy access to every means of transportation . . . by tank car, tank truck or drums.

These advantages apply to the complete family of PITT-CONSOL Phenols, Cresols and Cresylic Acids! *And complete technical assistance is at your service!*

WRITE FOR SPECIFICATION SHEETS
.....



**PITT-CONSOL
CHEMICAL COMPANY**

A SUBSIDIARY OF PITTSBURGH CONSOLIDATION COAL CO.

191 DOREMUS AVE., NEWARK 5, N. J.

WSW 617C

Newark Phone: MAket 3-3800 New York Phone: PEnnsylvania 6-9030

PRODUCTION

PROCESSES

Textile Printing: Du Pont has revealed its new Savagraph Process, a cellulosic-fiber textile printing method said to give the solid-color effect of dyeing. Conventional vat prints are usually not as solid as vat dyeings. Adapted from Du Pont's Pad-Steam Continuous Dyeing Process to the special techniques required for textile printing, the technique uses a new line of vat colors called Vantasol.

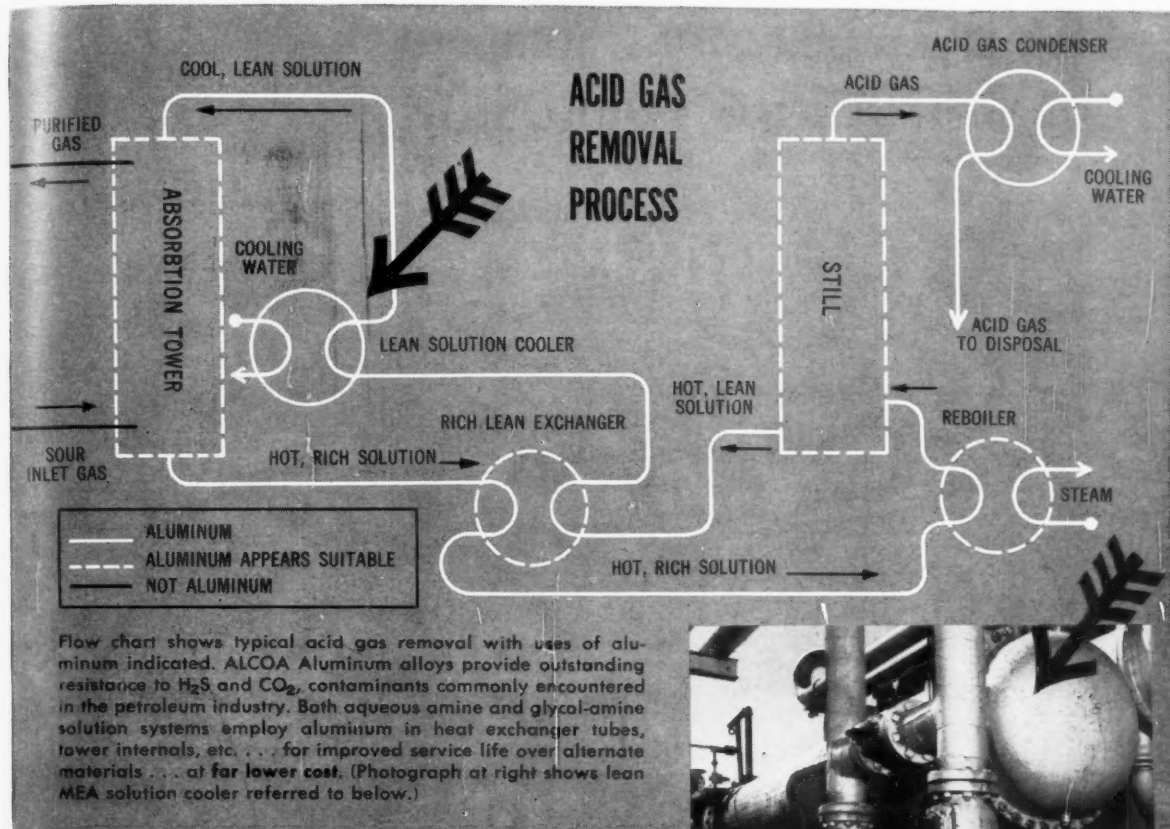
Here's how it works: From a water-in-oil emulsion of the Vantasol paste, the prints are developed by padding with hydrosulfite and caustic soda followed by a short steaming or flash-aging. After oxidation of the prints, mild soaping produces fastness, reportedly makes cloth suitable for any type of finish. It's claimed that prints can be stored indefinitely prior to final development without deterioration. Standard printing and dyeing equipment is satisfactory.

Polyurethane Processing: Mobay Chemical Co. (St. Louis, Mo.) has a new technique for producing flexible and rigid polyurethane foams and rubbers. Key to the process is a patented (U.S. 2,764,565) injection technique that, Mobay claims, permits closer quality control as chemical ingredients are blended and mixed under pressure. Advantages claimed for the new injection method: greater uniformity of texture and cell structure in urethane foams, closer control of properties in urethane rubbers.

High-Solids Latex: A new synthetic rubber latex process, called freeze-agglomeration, has been developed by B. F. Goodrich (Sponge Products Division). It is said to speed up reactor process time for production of high-solids-content latex, increase capacity of synthetic rubber industry, cut process costs.

Freeze-agglomeration instantaneously converts low-solids-content latex particles (300 Angstroms diameter) into large particles (2,000 Angstroms diameter), allows concentration to a fluid product of high-solids content. The process utilizes reactors with conventional agitation and cooling, will turn out 15,000 lbs. of dry polymer per reactor per day. Estimated cost of agglomeration and concentration: less than 2¢/lb. of dry-rubber content.

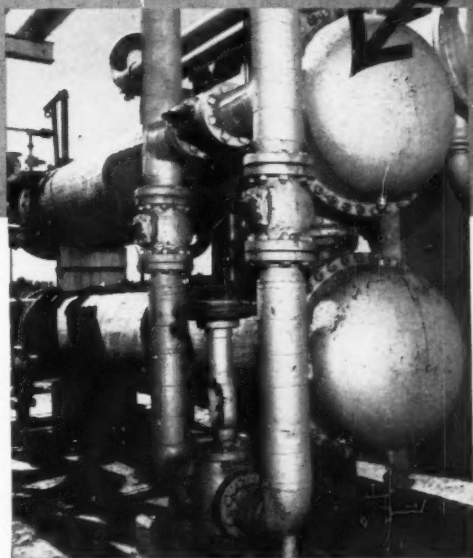
Major oil company proves corrosion resistance of **ALCOA ALUMINUM** Heat Exchanger Tubes



Over 750 days' exposure to corrosive gas contaminants has proved to a major oil company the superior resistance of ALCOA Alclad Heat Exchanger Tubes. Used in the lean MEA solution cooler of a Girbotol Gas Treater, the tubes are exposed to a solution carrying 10 grains of hydrogen sulfide per gallon at the rate of 350 gallons per minute. After more than two years of service, the aluminum tubes are virtually unaffected.

Such service records have proved time and again that ALCOA Alclad Aluminum Tubes withstand corrosion best. Materials like hydrogen sulfide and carbon dioxide—normally corrosive to most metals—are not corrosive to aluminum. That means longer service life, less maintenance—to reduce process operating costs.

What's more, ALCOA Aluminum Heat Exchanger Tubes in the common sizes cost far less than seamless tubes of other common materials . . . one-half as much as Admiralty brass . . . one-third to one-fifth as much as cupronickel or stainless steel. It will pay you to use the handy coupon today for complete details.



ALUMINUM COMPANY OF AMERICA
906-H Alcoa Building, Pittsburgh 19, Pennsylvania
Please send me your free 24-page booklet,
Alcoa Aluminum Heat Exchanger Tubes

Name _____
Company _____
Address _____
City _____ Zone _____ State _____



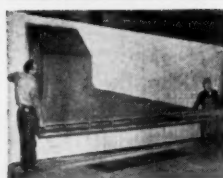
News

Wherever CORROSION RESISTANCE is a Factor **HAVEG... Industry's Standard For CONQUERING CORROSION**



in STORAGE AND PROCESS TANKS

Large Haveg tank installations have been in continuous use for twenty-five years, under extreme corrosive conditions.



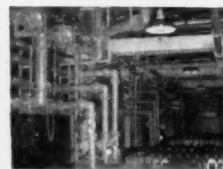
in FUME REMOVAL

Lightweight Haveg fume duct, hoods, stacks and fittings handle corrosive fumes and gases at temperatures up to 350° F.



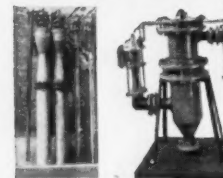
in CHEMICAL FLOORING

Haveg resin cements for brick and tile floorings, equipment linings, are ready for use within 24 hours.



in PROCESS PIPE AND FITTINGS

Haveg pipe and fittings, in several different plastic materials, may be flanged, threaded, cemented, or bell end-connected where required.



in COLUMNS, HEAT EXCHANGERS

Absorbing Towers, Chlorine Coolers and Vacuum Scrubbers designed by Haveg Engineers to meet your requirements with guaranteed performance.

... WHEREVER Positive Resistance to Corrosive Materials and Fumes is Required for Improved Process Operations

No other material offers as wide a range of effective resistance to corrosive acids, hypochlorites, salts, alkalis, and solvents as the Haveg plastics. Skilled Haveg engineers will assist you in selecting or developing equipment to solve your particular corrosion problems. Custom design

and field service is part of every Haveg process installation, to assure you full advantage of Haveg's low net cost. Contact a qualified Haveg representative, or write for Haveg Bulletins C-13 and G-10 for details of the complete line of Haveg corrosion resistant equipment.

HAVEG PLASTICS OF TOMORROW SOLVE YOUR CORROSION PROBLEMS TODAY

HAVEG INDUSTRIES, INC.

920 Greenbank Road, Wilmington 8, Delaware
Factory: Marshallton, Del. phone WYman 8-2271

Atlanta
Exchange 3821

Chicago
(Wheaton)
Wheaton 8-3225

Cleveland
Washington 1-8760

Detroit
(Livonia)
Kerwood 1-1785

Houston
Jackson 2-6840

Los Angeles
Mutual 1105

New York
(Westfield, N.J.)
Westfield 2-7383

Seattle
Main 9006

Denver
Belmont 7-0433

PRODUCTION

EQUIPMENT

Hammer Mill: Strong Scott Mfg. Co. (Minneapolis) has developed a new hammer mill with hardened metal screens that, it says, have lasted 10 times longer than ordinary screens in field test. The mill's carrier holds five screens, enables screen changes while the mill is operating. Also, a reversible rotor permits direction of hammers to be changed when leading edges become worn.

Steam Service: Clayton Mfg. Co. (El Monte, Calif.) offers a new mobile steam generator on a rental basis as an emergency replacement. The 100-hp. unit makes steam pressure up to 150 psig, available within about five minutes from the time it drives up and flexible connections are hooked in. Rentals will be made through regional dealers.

Heat-Treating Furnace: For close control of annealing, heat-treating, normalizing and other industrial heating operations, L&L Mfg. Co. (Upland, Pa.) is introducing its new Model V3672-S furnace. Designed with four zones, each with separately controlled input for fine gradient adjustments, the furnace can be automatically controlled over its heating and cooling cycle. Temperature range is 300-2200 F; capacity is for heating 2,000 lbs. of steel from 100 to 2000 F in 4 hours; interior dimensions are: 40 in. wide x 36 in. top of hearth plate to spring of arch, 44½ in. to center of arch x 72 in. deep.

Leakproof Blower: Its new centrifugal blower for handling corrosive, toxic and radioactive gases at high temperature and pressure is leakproof, says Allis-Chalmers Mfg. Co. (Milwaukee). The blower will develop a 150-ft. head in a 2,000-psi. system. The unit is designed to operate at gas temperatures up to 500 F.

Insulation Girdle: Techalloy Company, Inc. (Rahns, Pa.), has introduced Breather Springs for use with bands to hold insulation materials in place. The springs are designed to prevent insulation damage from expansion and contraction of tanks, towers, pipes, etc. Springs are 4 in. long, expand to 16 in., have a tensile strength of 275,000 psi. They can be used with any type of bands in widths of

"Another product safely shipped in Inland 'protection-eered'* Containers"



WELL-DRESSED FOR DIRTY WORK

Recently the DIVERSEY CORP. of Chicago introduced its new liquid detergent "TIG". But before "TIG" made its bow, there was a packaging problem that had to be solved from the inside out.

Diversey's chemists specified a steel pail with a lining that would prevent discoloration or contamination of this highly concentrated new detergent.

The sales department wanted a trim, convenient package with an attractive exterior, one that would register strong brand identification.

Inland took it from there. Our container "protec-

tioning" specialists developed a baked-on lining that tested out perfectly. Our design and lithography experts created a colorful exterior for the pail. "TIG" hit the market on schedule, all dressed up in the colorful new package as handsome as it is functional.

Now . . . ABOUT YOUR PRODUCT. Could the right container lining solve your problem of maintaining quality-in-transit? Would a more attractive container help increase sales? Chances are the steel packaging by Inland can give you just what you need. The full story is well worth your time. Write Bob Boecher, Dept. 314A.

**the right container, with the right lining for your product*



INLAND STEEL CONTAINER COMPANY

Division of Inland Steel Company • 6532 South Menard Avenue • Chicago 38, Illinois • Plants: Chicago, Jersey City, New Orleans, Cleveland and Greenville, Ohio
Full line of steel and stainless steel shipping containers, including galvanized and heavy duty ICC drums.



a Production-right PLANT SITE CAN MAKE THE DIFFERENCE IN YOUR FAVOR

When they're located right, new plants mean production-for-profit! Whether your best customers are *plants or people*, the lion's share is in B&O's Land of Big Opportunity. 30 of the nation's 52 top industrial areas east of the Mississippi—and 11 of the first 15 Standard Metropolitan Markets—*directly served by B&O!*

Convenience to such markets is your dividend, when you select an UNUSUAL site, suited to *your* needs. See sites *on the ground...* or at your desk, with modern airviews plus 3-dimensional color. *Ask our man!*



SPECIAL STUDY
"Look where a site
is production-right"
ON REQUEST FROM
B&O RAILROAD
BALTIMORE 1, MD.

You can reach him at:

Baltimore	1	Phone: LExington	9-0400
New York	4	Phone: DIgby	4-1600
Pittsburgh	22	Phone: COurt	1-6220
Cincinnati	2	Phone: DUbar	1-2900
Chicago	7	Phone: WAbash	2-2211



Baltimore & Ohio Railroad

Constantly doing things—better!

PRODUCTION

$\frac{3}{8}$, $\frac{1}{2}$ and $\frac{3}{4}$ in., thicknesses of 0.015 and 0.20 in.

Variable-Stroke Pump: Seter Engineering Corp. (Milwaukee) is out with a new variable-stroke piston pump. Dubbed Design H, the pump comes in simplex and duplex models, both with twin-disc stroke adjustment from 0 to 8 in. for volumes from 0 to 100% of capacity. With 6-in. diameter plunger and 8-in. stroke, simplex pump will deliver maximum of 3,200 gal./hour. Plunger sizes: 2 to 6 in.

Turbidity Measurements: Continuous monitoring of fluid turbidity is the claim of Baird Associates-Atomic Instrument Co. (Cambridge, Mass.) for its new Turbistat. The dual-beam unit compares the light scattered by suspended particles with the light transmitted by the fluid. Color changes do not affect readings. The Turbistat can be used on any stream up to 3-in. diameter.

Another new Baird-Atomic instrument is a gas analyzer for precise measurement of gases other than diatomics. The unit, a negative-filter, nondispersive analyzer is said to be a rapid means of analyzing carbon and sulfur in steels and lube oils.

Radiation Shield: Leadcast, a new lead-plastic compound said to be suitable for shielding radioactive materials, is the offering of Telectro Industries Corp. (Long Island City, N.Y.). The compound contains 95% lead, is claimed to be harder than pure lead and to have greater structural rigidity. Other claims: it can be molded into any shape, with a tolerance of plus or minus 0.005 in.; surface requires no finishing; it's inert to oxidation, other corrosive contamination.

Degreaser: Tect, Inc. (Dumont, N.J.), says its new solvent-vapor degreaser has been specially designed for safety. The body of the degreaser is galvanized steel with a solvent-imperious resin coating. The stainless steel condensing coil has two thermostatic controls—one to prevent thermal decomposition of chlorinated solvent and to shut off the machine for draining, and the other to prevent solvent vapors from escaping if water supply fails. Dubbed Model 22, its production capacity is about 350 lbs./hour of metal.

Dracco system recovers \$1,000,000 of dust a year

Catching microns is a million-dollar business at the Alloy Division of The Brush Beryllium Co., Elmore, Ohio. There a Dracco Dust Control installation collects 900 pounds per day of beryllium-copper alloy dust valued at \$5 per pound—an annual recovered treasure worth over \$1,000,000!

Twin Dracco Multi-Bag Filters handle the dust-laden exhaust from electric furnaces which produce the critical alloy, extracting precious particles at

99½–100% efficiency. The million-dollar dividend of dust is returned to process for reuse.

This profitable product recovery system has also given Brush Beryllium a cleaner, healthier plant in which men and machines work better. Potential problems of product contamination and air pollution have been avoided. And improved plant efficiency has cut costs.

If your problem is recovering a dust fortune . . . or eliminating a dust that is

a nuisance or a hazard, Dracco experience qualifies it as the top organization to work with. A Dracco engineer will be glad to discuss your problem with you. Call or write today.

DRACCO CORPORATION

4080 East 116th Street • Cleveland 5, Ohio

Filtering a fortune—Pay-off from Dracco Dust Control system at alloy plant is recovery of \$1,000,000 of product dust annually. Operating 24 hours a day, filters have needed "negligible maintenance" since installation in 1953.



Bulletin 800 is Dracco's 40-page catalog on dust control and recovery. Contains detailed facts and figures on all dust control equipment. For your copy, write Dracco today.

DRACCO *Performance Proved*
Airstream CONVEYORS • DUST CONTROL EQUIPMENT

PETROCHEM LINES

NO. 5
OF A SERIESPublished by AMERICAN CYANAMID COMPANY, Petrochemicals Department
30 Rockefeller Plaza, New York 20, N. Y.

Acrylonitrile in Adhesives



Call it what you will, gum, mucilage, paste or glue, an adhesive does just one job; it binds similar or dissimilar materials together for a more or less permanent union. Depending on the substrates involved and the use to be made of them, many different adhesives are available. These include several acrylonitrile derivatives, such as nitrile rubber, polyacrylates, hydrolyzed polyacrylonitrile and polyacrylamide.

Nitrile Rubbers

Considering the advantages to be gained by having one material do the work of many, it is not surprising that nitrile rubber has widespread adhesive applications. Fashioned basically from acrylonitrile-butadiene copolymers, they form excellent bonds with wood, metal, rubber, glass, leather, paper and textiles, and neither heat nor cold nor water nor fungus will weaken their grip. Moreover, they are compatible with resins so that valuable modifications can be made. For example, blends can be produced with phenolics which combine the phenolics' cured adhesive strength with the nitrile rubbers' flexibility and high impact properties. Other modifications include those with various vinyl polymers, wood rosins, neoprene, styrene-butadiene rubbers, and natural rubbers.

Polyacrylate Esters

Under suitable conditions, various acrylate esters may be derived from acrylonitrile. These esters can be polymerized or copolymerized to form resinous products ranging from soft, sticky oils to highly elastic rubbers.

These properties are, in turn, imparted to the adhesive formulation. For example, polyethylacrylate and other acrylic esters have been widely used because of the strong, flexible, and chemically resistant bonds obtained with glass, leather and textiles. They are usually applied by solvent release or fusion to give water-, cold- and fungus-resistant bonds.

Hydrolyzed Polyacrylonitrile

This modified sodium polyacrylate forms clear, alkali-stable, aqueous solutions. These have interesting film-forming and bonding characteristics. They have broad potential in the water-soluble adhesive field now served by methylcellulose, carboxymethylcellulose and polyvinyl alcohol.

Polyacrylamide

Perhaps the newest among acrylonitrile-derived water-soluble adhesives is polyacrylamide. This polymer is water-white, neutral in pH and displays good stability under acidic conditions.

Reaction of Acrylonitrile with Aromatic Compounds

In addition to reacting with a variety of aliphatic and alicyclic molecules, acrylonitrile will also combine with a number of aromatic compounds. Among these are hydrocarbons, hydroxy compounds and amines.

Let us look at these more closely. The Russian literature reports that benzene reacts easily with acrylonitrile when catalyzed by aluminum chloride and hydrogen chloride. The authors postulate that hydrogen chloride first reacts with acrylonitrile to form β -chloropropionitrile, and that this undergoes a Friedel-Crafts reaction to form β -phenylpropionitrile in 66% yield.

A somewhat different reaction occurs with fluorene. Here, basic catalysts result in the formation of 6,6-dicyanoethylfluorene in 74% yield.

Many aromatic hydroxy compounds also react with acrylonitrile. Of particular interest is the reaction with β -naphthol. In the presence of sodium hydroxide, acrylonitrile reacts to form not the expected β -naphthoxypropionitrile, but rather 1-cyanoethyl-2-hydroxynaphthalene in 93% yield.

Another group of aromatic derivatives which react with acrylonitrile are the phenylhydrazines. Depending upon conditions, the reaction can follow two courses. One occurs in aqueous media using acetic acid as catalyst to produce 1-(2-cyanoethyl)-2-phenylhydrazine in 74% yield. The other takes place in ethanol as solvent and in the presence of a basic catalyst to form a heterocycle, 3-amino-1-phenyl- Δ^2 -pyrazoline, also in 74% yield.

Abstracts of papers describing these reactions appear periodically in *Acrylo-News*. Write for your copy of this continuing bibliography of acrylonitrile references.

Technology

Newsletter

CHEMICAL WEEK
October 20, 1956

Possibilities of a new avenue of attack on diabetes were opened up last week with disclosures made at annual meeting of the Federation of Sewage and Industrial Wastes Assn. at Los Angeles. Infectious hepatitis, the debilitating liver disease, was discussed by Bernard E. Berger, director of the U.S. Public Health Service. He reported:

- A method developed by the center for recovering infectious hepatitis viruses present in low concentrations in public drinking water supplies. He stated that epidemiological evidence now definitely implicates conventionally treated drinking water as a major culprit in transmitting the disease. Up to now, there's been no method of recovering, identifying and counting the viruses after treatment.

- Successful development by Parke, Davis of a tissue-culture technique to grow the virus outside the human body. This is the first time this has been done successfully.

Parke, Davis is cautiously limiting its claims to having grown a "virus that produces reactions similar to hepatitis." But Berger's Sanitary Engineering Center is pressing "intensive tests" to confirm its belief that the culture is indeed of the hepatitis virus.

These two developments could help immeasurably in working up sewage-treatment methods to kill the virus in drinking water. Because infectious hepatitis is strictly a human ailment and can't be given to monkeys or lab animals, the Parke, Davis development, in particular, has great potential significance.

Vitro Corp. will produce uranium salts by the Excer process if its bid for a 2,000-tons/year feed-materials plant is accepted by AEC (*CW*, Oct. 13, p. 22). The company disclosed that plan last week in Salt Lake City.

The Excer process is a multistep procedure, details of which are now classified. But when Vitro's project is declassified, don't be surprised to learn that one of the key steps involves the use of ionic membranes as diaphragms in an electrolytic cell. Function of the cell is to reduce uranyl solutions (to uranous form) while simultaneously precipitating uranous tetrafluoride (green salt), starting material for production of either uranium metal or uranium hexafluoride.

Ionics, Inc. (Cambridge, Mass.), which has done much research on ionic membranes, discussed such a process last month at the Atomic Industrial Forum in Chicago. Ionics said the method is applicable to processing low-grade ores or spent fuels. AEC has had a long-standing interest in this technique. Rohm & Haas also did a considerable amount of early work for the commission (e.g. U. S. patents 2,739,934, 2,741,589), has

Technology

Newsletter

(Continued)

proved the operations of the membrane electrochemical technique in large bench-scale cells.

One big advantage of the ionic-membrane process: it yields granular electroprecipitates that are easier to handle than the gel-like products of chemical precipitation.

First details of the Veterans Administration's crash program for evaluation of mental drugs were unfolded this week. Two tranquilizers—Wyeth's promazine and Smith, Kline & French's chlorpromazine—will be tested on 1,000 acute schizophrenics in 37 VA hospitals from coast to coast.

This is important: It's the first broad-scale clinical evaluation of mental drug therapy. National Institutes of Mental Health gave VA an assist in establishing protocols for the project—to assure uniform treatment and reporting. The test calls for use of the "double blind" control to guard against subjective influencing of data by physicians. Phenobarbital tablets in addition to inactive sugar-pill placebos will be used.

Preliminary results will be checked at a conference next May. But no target date for a full report has been set. Reports probably will be turned over to an outside agency (such as the National Research Council) for evaluation. After the first stage, VA plans to examine other tranquilizers and other mental disorders.

A "pilot" system for reporting "unusual or adverse" drug reactions will be started by the Food & Drug Administration. Eleven hospitals will participate. The idea is to eliminate the time lag—often months—between the occurrence of the reaction and the time FDA learns about it.

Farbenfabriken Bayer is introducing two new versions of perlon that should stir up interest in this country: "Bayer-Perlon-hochweiss" and "dor-color" perlon. The hochweiss is a snow white material, said to have an improved resistance to graying. The dor-color fiber is made by dope-dyeing, whereby the pigment is incorporated right in the polymer. (Du Pont earlier this year revealed it was using this approach to achieve its black "color-sealed" nylon.)

Irradiation of polyethylene insulation is coming in for attention abroad, too: British Insulated Callender's Cables (London) is experimenting with a continuous process utilizing a 2-million-volt Van de Graaf accelerator. General Electric and Sequoia Process (Redwood City, Calif.) have independently been pushing similar projects in this country.

New York City . . . where Dow caustic works for chemical manufacturers.



wherever you're producing

DEPENDABLE CAUSTIC SODA RESEARCH IS ASSURED FROM DOW

Dow is the one producer, you know, supplying caustic soda to industry everywhere. Wherever you produce, you're sure of getting rapid, dependable service from Dow.

Continual Dow *research* on processing that involves caustic now . . . or will years from now . . . develops ways for you to do it better, faster, at decreased cost. This creatively

practical planning helps you to improved, more uniform products to sell profitably in new markets.

Then, too—there's multiplant production, flexible delivery network, prompt field technical service. Does Dow have *your* order? THE DOW CHEMICAL COMPANY, **Dent. AL 751B-2**, Midland, Michigan.

you can depend on DOW CHEMICALS



MARKETS

SURFACTANTS: HOW MUCH TO HOUSEHOLDS?

	Consumption Million Pounds*	Percent of total		Consumption Million Pounds*	Percent of total
Household cleaning	548	51.5	Metal cutting	21	2.0
Petroleum	182	17.0	Chemical Intermediates	20	2.0
Concrete	75	7.0	Cosmetics	18	2.0
Formulated cleaners	46	4.0	Agriculture	16.5	1.5
Textiles	30	3.0	Dry cleaning	10	1.0
Food	25	2.0	Other	42.5	4.0
Other aqueous cleaning	25	2.0	Total	1,059	100.0

*All figures are for 1955, on a 100% active-agent basis; the total represents about 98% of all U.S. production (1,071.5 million lbs. in '55) as reported by the Tariff Commission.

Survey Poser: An End-Use Switch?

Market studies on surface-active agents usually agree pretty well with one another, provoke little or no controversy. But the latest survey—presented last fortnight to members of the American Oil Chemists Society by Carl Pacifico and M. E. Ionescu of American Alcolac—runs counter to some generally accepted ideas, gives surfactant marketers something to think about.

Three main trends in surfactant markets were emphasized:

- Constantly changing end-use patterns make obsolete most of the recent estimates of volume distribution.
- A growing number of uses for surface-active agents consume more than 500,000 lbs./year.
- Widely varying properties are required of surfactants to fit them into a host of applications.

Home Use Down: The conclusion that most surfactant end-use patterns are now obsolete should elicit considerable interest. For the new findings (see cut) differ markedly from previous estimates of the largest single outlet for surface-active agents: the household market—usually estimated at 75-80% of total surfactant consumption—is now reported to be only about 50-55% of all surfactants used in the U.S.

This single fact, say Pacifico and Ionescu, "may be important in releasing our energies for creative development of markets in the industrial

fields. There is a rich potential market in such applications as ore flotation, agriculture, road building, and petroleum processing."

But greater importance, they hasten to add, should be placed on the properties of surfactants required for specific applications rather than on consumption figures—which are likely to be only of transient usefulness.

Nonetheless, market researchers still want to know how much goes where, hence this detailed breakdown of surfactant usage in '55 (in million pounds of 100%-active material):

Top outlet among formulated cleaners was the manufacture of dishwashing materials, which consumed 13 million lbs. of surfactants. The needs of other formulated cleaners were: dairy, 6 million lbs.; detergent sanitizers, 6; floor cleaners, 5; commercial laundry supplies, 4; rug cleaners, 2; mechanical dishwashing materials, 1; maintenance and miscellaneous cleaners, .9; dry cleaning, 12.

In the household products category, high-foam laundry products took a whopping 350 million lbs. Next largest outlets were liquid dishwashing products, low-foam laundry detergents, and dishwashing powders—65, 55 and 50 million lbs., respectively. Scouring powder—at the next lower notch—required 20 million lbs. Trailing with relatively small demands were: synthetic bar detergents, 3 million lbs.; woodwork and wall cleaners, 2; softening

agents, 1.5; wool washing, 1; bleach powders, 0.5.

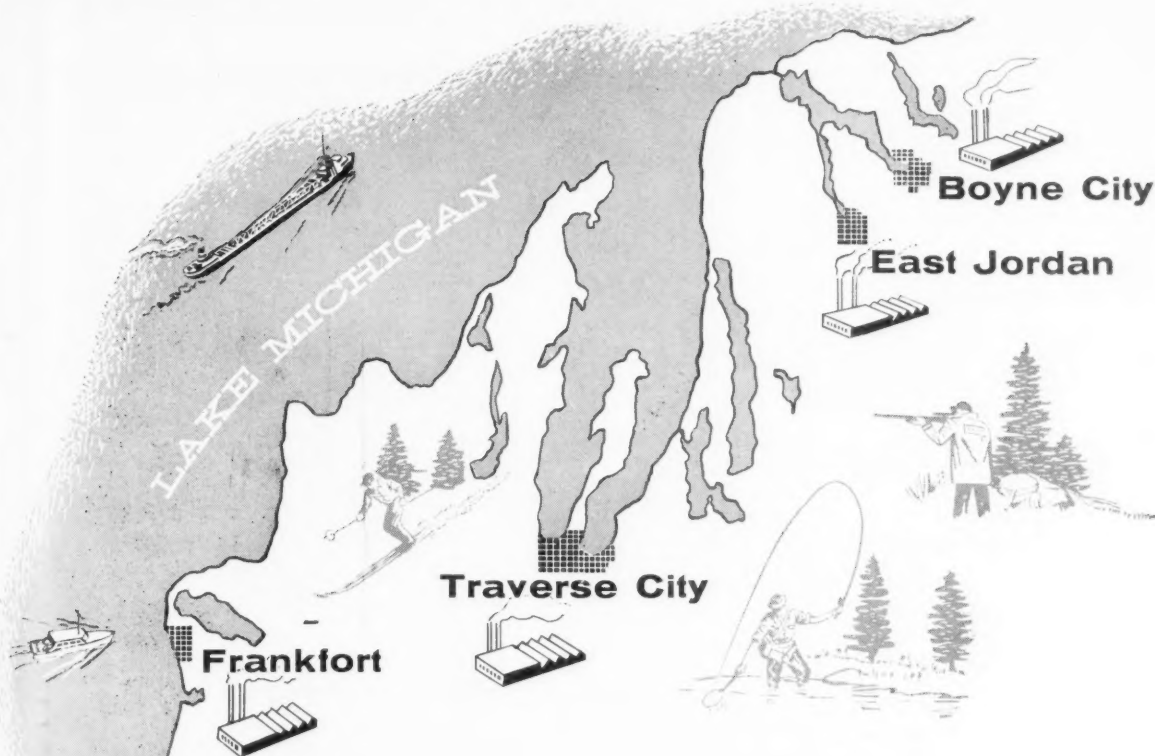
In petroleum processing, lubricating oils were far out in front in consumption of surfactants—some 145 million lbs. in '55. Next largest use was demulsifying, which took 30 million lbs. Minor outlets in the petroleum industry: transmission oil additives, 2.5 million lbs.; secondary oil recovery, 2; gasoline additives, 2; acidizing, 0.5.

For agricultural uses, pesticide needs were tops, with 12 million lbs. used as emulsifiers and 4 million going into wettable powders. Fertilizer uses were still only 0.5 million lbs.

In metal processing, metal cleaning consumed 4 million lbs.; metal cutting, 21; ore flotation, 10.

A variety of other uses consumed the following amounts; carwashing, 10 million; chemical intermediates, 20; concrete, 75; dispersing of dyes, pigments, etc., 2; fire fighting, 0.5; food, 25; paints, 9; paper, 6; plastics and resins, 4; textiles, 30; wallboard, 1; waxes, polishes, 5; miscellaneous, 10.

In surveys, there's always a question about what materials should be included as surface-active agents. This breakdown is based on U.S. Tariff Commission classifications, but with two notable omissions: sulfonated oils and fatty acids. In any event, the survey, though quite exhaustive, should not be considered final. Instead, it's a start on which other market researchers can elaborate.



LOWER PENINSULA
OF MICHIGAN

•
WHITE SECTION
IS THE
GRAND TRAVERSE
REGION

GRAND FOR INDUSTRY

Port Cities of the Grand Traverse Region in Outstate Michigan

The St. Lawrence Seaway and the Mackinac Bridge heighten the advantages offered to industry by the port cities of the Grand Traverse Bay Region in Outstate Michigan.

Traverse City, Frankfort, East Jordan and Boyne City now can offer water transportation to the markets of the world and swifter truck transportation, via the Bridge, to Michigan's Upper Peninsula and the West.

Traverse City is at the foot of Lake Michigan's beautiful Grand Traverse Bay. East Jordan and Boyne City are on Lake Charlevoix, Frankfort on Lake Betsie. Both Lake Charlevoix and Lake Betsie are connected by ship channel with Lake Michigan.

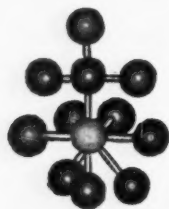
Fine industrial sites, with unlimited water for industrial processing, are available at all these ports. They are close to the center of the great Midwest market. Skilled manpower is available. So are raw materials and processed parts. Water transportation is augmented by railroads, motor trucks and airlines. Electric power is plentiful.

And don't forget that this is a region whose beauty and charm have made it one of America's favorite vacationlands. Your plant will be only minutes away from wonderful fishing, hunting, swimming, yachting, skating, skiing. Your employees will like this — and so will you.

Telephone or write to our Industrial Development Department for complete information.

CONSUMERS POWER COMPANY
JACKSON, MICHIGAN

Serving 3,500,000 People
in Outstate Michigan



would a
better
solvent
improve
your product?

Many times, the solvent you use in the manufacture of your product can mean the difference between top quality or merely marginal results. With Solvents produced by Eastern States Chemical you can be assured of producing consistently superior products that get continued acceptance in the market place.

Espesol aromatic and aliphatic solvents are produced under such exact conditions that you can always expect them to be of exceptional uniformity, the highest quality and finest purity.

Today, send the coupon below for additional information . . . Espesol solvents may be the answer to your production problem.

ESPESOL
EASTERN STATES
Chemical
Corporation

Eastern States Chemical Corp.
Dept. C-1020, P. O. Box 5008
Houston 12, Texas
Phone: WA1nut 3-1651

ESPECO



Gentlemen: I would like to know more about solvents produced by Eastern States.

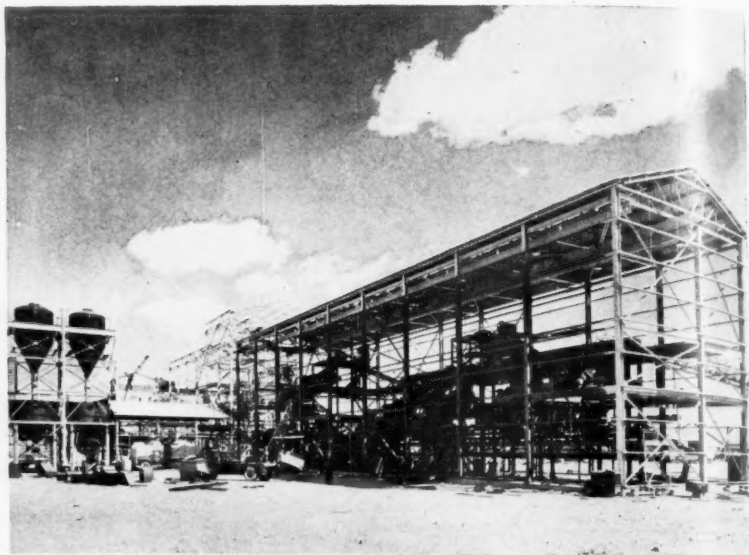
Your Name _____

Firm Name _____

Address _____

City _____ Zone _____ State _____

MARKETS



Preview: Carlsbad Potash

ON-SCHEDULE construction of facilities at National Potash's new mine near Carlsbad, N.M., virtually assures product shipments by Feb. '57.

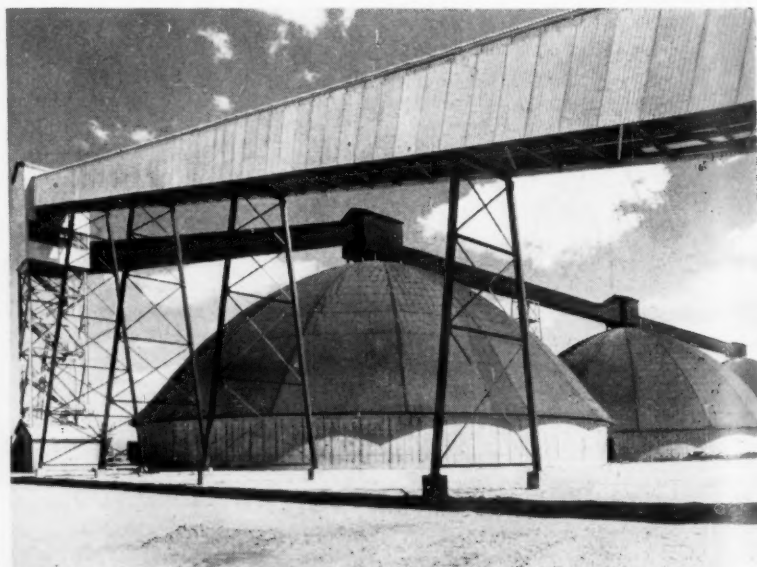
The \$19-million installation (owned jointly by Freeport Sulfur and Pittsburgh Consolidation Coal) will have a capacity of 400,000 tons/year of high-grade muriate of potash.

Two mining shafts have been sunk to the ore level; a 21-mile-long water pipeline is in operation; the refinery

and other units are nearing completion.

Crushing, screening and crystallizing units (*above*) will handle up to 4,800 tons/day of ore. Product storage buildings (*below*)—185 ft. in diameter and 90 ft. high—have a total capacity of more than 100,000 tons, feature underground conveyors for reclaiming stored products.

The installation will enable the firm to meet peak fertilizer demands and speed loading of hopper or box cars.



when **Efficiency** is important

in handling dry materials in bulk

... call on

Fuller

... pioneers in harnessing AIR

In

every well-run business,

the degree of efficiency dictates profit or loss.

Your degree of materials handling efficiency merits careful watching because, as analysis of your complete operation probably would show, the flow of bulk materials from Receiving to Storage to Process, or Shipping governs your entire manufacturing process in dozens of different ways.

For the most efficient utilization of your manpower and your equipment, call on Fuller for a realistic appraisal of your needs. Be sure to ask for Fuller's Bulletin G-2, "How to Pull Dollars Out of Thin Air."

Fuller-Kinyon Airveyor Airlide Fuller-Fluxo Automatic Control

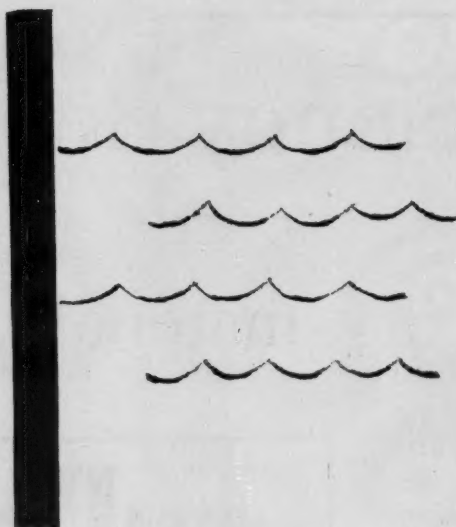


Fuller

... pioneers in harnessing AIR

FULLER COMPANY, 144 Bridge St., Catasauqua, Penna.
GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY
Chicago • San Francisco • Los Angeles • Seattle • Birmingham

LEAD IS THE METAL THAT HEALS ITSELF!



In contact with many highly corrosive chemicals, including chromic, sulfuric, sulfurous and phosphoric acids, lead reacts instantly to form an adherent and insoluble surface film. No matter how often this skin is damaged, it re-forms automatically to give full protection against corrosion. Lead alone among metals and synthetic materials, has this inherent ability to heal itself immediately.

For piping, fittings and lining of chemical equipment, lead has other definite advantages. It is relatively inexpensive, extremely durable, pliable and malleable. It is easily salvaged and the scrap value of lead is usually a high percentage of its original cost.

Federated Research conducts a constant study of lead and its applications. Federated sales engineers can give the best possible technical help in solving your corrosive-handling or storing problems.

Write for Federated's Lead Handbook for the Chemical Process Industries. Or call any of our 12 plants and 23 sales offices if you have an immediate chemical corrosion problem.

Federated Metals

DIVISION OF AMERICAN SMELTING AND REFINING COMPANY
120 BROADWAY, NEW YORK 5, N. Y.
In Canada: Federated Metals Canada, Ltd., Toronto and Montreal



Aluminum, Anodes, Babbitts, Brass, Bronze, Die Casting Metals, Lead, Lead Products, Magnesium, Solders, Type Metals, Zinc Dust

MARKETS

Chemical Gain in U.S.-Soviet Trade

U.S. trade in chemical products with the Communist world showed a marked increase in '55, according to latest figures from the International Cooperation Administration.

U.S. imports of chemicals and related products from the Soviet bloc were, in '55, valued at nearly \$10 million—almost three times the '54 total. (This does not include U.S. sales of inedible tallow—which amounted to \$395,000 last year, \$552,000 in '54—to U.S.S.R.'s European satellites.) Meanwhile, purchases of U.S. chemicals by Russia and its European satellites climbed from \$236,000 in '54 to \$410,000 last year.

Total imports from Russia, its European satellites, Red China and Outer Mongolia were valued at nearly \$65.2 million—\$16 million more than in 1954, but still far below the \$233 million in 1948 before trade controls were stiffened. U.S. exports to these countries moved up a shade—to \$7.25 million, from \$7.07 million in '54.

These chemical items figured in last year's U.S. trade with the Soviet bloc:

Imports from U.S.S.R.: benzene, \$3.78 million; naphthalene, \$186,000.

Imports from the satellites: benzene \$2.74 million; naphthalene, \$1 million; fertilizer and fertilizer materials, \$2.29 million. (U.S. purchases in '54 from these satellites: benzene, \$1.92 million; naphthalene, \$28,000; fertilizers \$1.49 million.)

Exports to U.S.S.R.: industrial chemicals, \$128,000; chemical specialties, \$5,000. (In '54, Russia purchased \$179,000 worth of U.S. coal-tar products; in '55, none.)

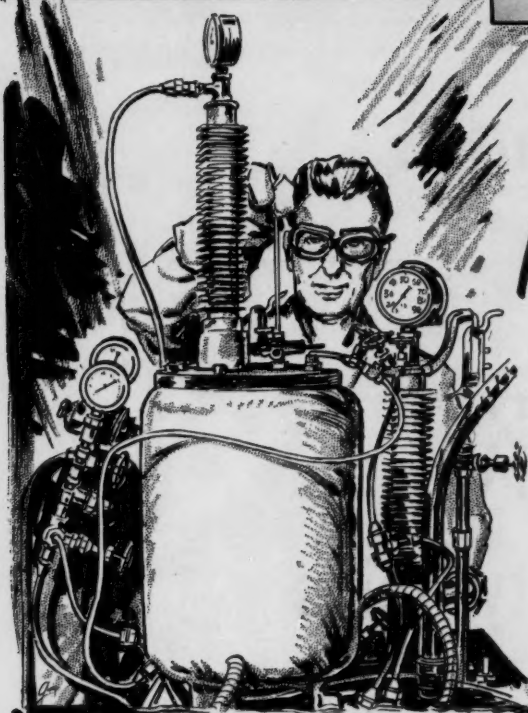
Exports to Soviet European satellites: industrial chemicals, \$66,000; fertilizer and fertilizer materials, \$242,000; chemical specialties, \$13,000; medicinals and pharmaceuticals, \$16,000. (In '54, the satellites bought \$39,000 worth of chemical specialties and \$18,000 worth of drugs.)

Only a handful of strategic material shipments reached the Red nations. One example: under old commitments and with U.S. consent, the United Kingdom shipped \$227,556 worth of mercury and vacuum pump equipment to Poland.

keeping up with

SODIUM

YOU CAN BORROW A PILOT UNIT FOR MAKING DISPERSIONS



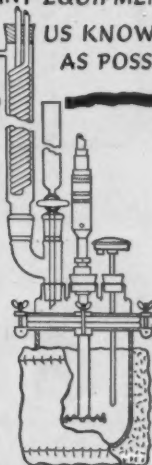
NEED HELP IN SPEEDING THE PROGRESS OF YOUR SODIUM PROJECTS? JUST AS U.S.I. HELPS BY PROVIDING SAMPLES OF SODIUM DISPERSIONS FOR RESEARCH, IT CAN NOW HELP BY LOANING YOU A PILOT SIZE DISPERSION UNIT FOR YOUR NEXT STEP. THIS UNIT WILL PREPARE 3 TO 4 GALLONS OF 10 TO 20 MICRON DISPERSIONS IN LESS THAN 20 MINUTES. RESULTS WILL DUPLICATE LAB EXPERIENCE AND CAN BE SCALED UP TO PERMIT PROPER DESIGN OF PLANT EQUIPMENT.

NO OBLIGATION, BUT LET US KNOW YOUR NEEDS AS FAR IN ADVANCE

AS POSSIBLE.

Prefab Dispersion Units Now Being Sold—

IF YOU WANT MILLILITERS FOR LAB EXPERIMENTS OR GALLONS FOR PILOT EVALUATION, COWLES DISSOLVER COMPANY WILL SELL YOU A PACKAGE UNIT. THESE UNITS WERE DESIGNED JOINTLY BY COWLES AND U.S.I. AFTER U.S.I. RESEARCH DEPARTMENT EVALUATED THE COWLES "DISSOLVER" AND FOUND IT AN EFFICIENT IMPELLOR FOR DISPERSING SODIUM. A DRIVE ASSEMBLY, IMPELLOR AND OTHER INDIVIDUAL PARTS ARE ALSO AVAILABLE FOR MODIFYING EXISTING EQUIPMENT.



ADD THESE VOLUMES TO YOUR SODIUM REFERENCE LIBRARY

- **HANDLING METALLIC SODIUM ON A PLANT SCALE**—NEWLY REVISED U.S.I. MANUAL. 40 PAGES ON SAFE HANDLING TECHNIQUES, EQUIPMENT, USES, FORMS AND CHEMISTRY. (AVAIL. FROM U.S.I.—NO CHARGE.)
- **LIQUID-METALS HANDBOOK, SODIUM-NAK SUPPLEMENT**—JULY, 1955 BY A.E.C. AND DEPT. OF NAVY. (AVAIL. FROM SUPT. OF DOC., \$2.00.)
- **SODIUM PLUMBING**—A REVIEW OF UNCLASSIFIED RESEARCH AND TECHNOLOGY FROM OAK RIDGE NATIONAL LABORATORIES. (USAEC ORNL-1688, AVAIL. FROM TECH. SERV., DEPT. OF COMMERCE, \$60.)



INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation
99 Park Avenue, New York 16, N. Y.
Branches in principal cities

Announcing...

PAMAK*

Tall Oil Fatty Acids



Hercules Powder Company announces the availability of Pamak tall oil fatty acids—a major new source of supply for these versatile chemical materials.

Produced in the latest type of multi-column fractional distillation equipment at Hercules' new operation at Franklin, Virginia, Pamak tall oil fatty acids are designed to meet your specific requirements for uniform high quality.

The opportunity to discuss how Hercules may best serve you will be welcomed. For technical specifications and shipping information, write:

*Hercules trademark

HERCULES

HERCULES POWDER COMPANY

INCORPORATED
992 Market St., Wilmington 99, Del.

Market Newsletter

CHEMICAL WEEK
October 20, 1956

The hectic flurry of price-changing that whipped through the nation's chemical marketplaces over the past several weeks has just about subsided. Reason, of course, is that most of the alterations were tied to quarterly notification clauses in customers' contracts.

But that doesn't mean that there won't be others posted between now and the first quarter of the new year. For instance, on Nov. 1, some aerosol propellant users will be handed a price cut. Du Pont late last week announced upcoming reductions in tank-truck and tank-car tags on its Freon-11 and Freon-12.

New prices in those quantities: 20¢/lb. and 25.3¢/lb., respectively, f.o.b. plants at Carney's Point, N.J., E. Chicago, Ind., and the company's brand-new multimillion-dollar installation at Antioch, Calif., that's just now rolling into production.

Prices on propellant solutions of mixtures of the two Freons, however, will be increased by about 4%—Du Pont's method of straightening out an odd pricing practice in which such mixtures are selling for less than the components, despite the added cost of the mixing operation. Tank-car price of a typical 50-50 solution will go up to 22.3¢/lb., a penny more than current schedules.

Also starting next month, contract customers for sodium chromate and bichromate and potassium bichromate will pay more ($\frac{3}{4}$ ¢ to $1\frac{1}{2}$ ¢/lb.) for their needs. (Spot prices went up in late September.) Familiar reason given for the hikes: increased costs of manufacturing.

The new schedules peg granular sodium bichromate at 13¢/lb. in bags, car load and truck load; anhydrous sodium chromate at $14\frac{3}{4}$ ¢/lb. in fiber drums, both up $\frac{3}{4}$ ¢/lb. Potassium bichromate, granular, goes up $1\frac{1}{2}$ ¢/lb., to 18¢ in c.l. and t.l. quantities.

Up this week are prices on theobromine alkaloid. The advance, amounting to 75¢/lb., establishes the NF grade at \$4/lb. Producers report no dearth of demand, though, and supplies on hand are adequate to take care of all calls.

Selenium continues in a tight supply condition, though the market has eased a little in the past year or more. Producers' quotes are firm at a high \$15.50/lb., but resellers are asking considerably less than the \$30-35/lb. heard frequently earlier this year (*CW Market Newsletter*, Feb. 11).

Incidentally, word out of Washington is that exporters of the scarce metal or its chemical derivatives planning to ship out of the country against the first-quarter '57 quota may file applications for licenses between Dec. 3 and 17. The Bureau of Foreign Commerce's list of selenium com-

Market Newsletter

(Continued)

modities for which export licenses will be issued: powder; metal (except selenium-bearing scrap materials); salts and compounds, including selenium dioxide; salts of organic compounds; selenium-containing pigments; selenium-containing rubber compounding agents not of coal-tar origin; and ferroselenium.

Consumption of natural and synthetic rubber in the U. S. is going down, but world use is climbing. According to the Secretariat of the International Rubber Group in Washington, U. S. consumption in the first 8 months of this year slipped 4.7% under that for the comparable '55 period (958,000 tons vs. 1,006,000), while world consumption during Jan.-Aug. '56 amounted to 1,975,000 tons, compared with last year's 1,895,000.

Natural rubber production apparently isn't taking as much of a licking from synthetic as some may believe. World output of the natural material during the first 8 months of '56 amounted to 1,197,500 tons, just about the same as it was last year.

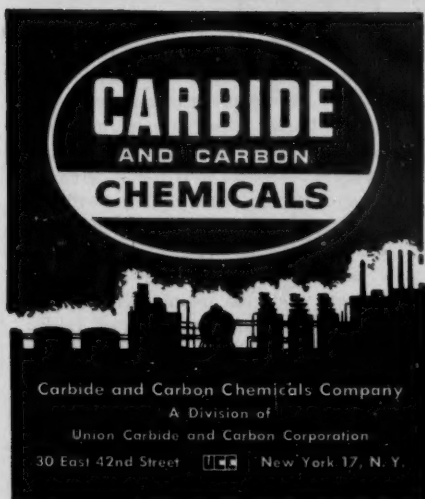
Chemical and petroleum shippers can now make wider use of stainless steel tank trucks for hauling flammable and poisonous liquids. Why? Yield strength requirements on metal used in the tanks have been lowered from 50,000 lbs./sq. in. to 32,000 psi. by a recent revision of construction regulations on specification MC-300, 303 and 304 tanks by the Interstate Commerce Commission.

The new ruling goes into effect Dec. 17, and is sure to stimulate the building of stainless steel tanks and clear up some confusion about their use.

Don't look for any mass switch from regular steel and aluminum tanks, though. Manufacturing cost of the stainless runs high: about \$15,000-20,000 for a 6,500-7,000-gal.-capacity tank, while regular steel tanks cost about half that, and aluminum jobs run about \$10,000.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending October 15, 1956

	Change	New Price
Crude cottonseed oil, tanks, lb.	\$0.01	\$0.135
Theobromine, NF, fib., dms., lb.	0.75	4.00
Tin metal, (Straits), lb.	0.00625	1.055
DOWN		
Tankage, animal, feeding, 9-11% ammonia bulk, per unit ton	\$0.25	\$5.00
Chicago, bulk, per unit ton	0.50	6.25



NIACET vinyl acetate monomer

Trade-Mark

A large, new unit is now on stream at Texas City, Texas. This unit more than doubles existing capacity there and substantially increases national production of vinyl acetate monomer.

With this increased availability, you can count on CARBIDE to continue to meet your growing needs for vinyl acetate monomer. And you can rely on NIACET vinyl acetate monomer because it is produced by the pioneer and leader in vinyl monomers.

In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

The term "Niacet" is a registered trade-mark of Union Carbide and Carbon Corporation.

SPECIALTIES



PAVING STREET WITH SOAP gets publicity, but sales are made by new packages, colors, formulations.

Stunts Pave Way for Bar-Soap Push

In St. Louis this month, newspaper ads feature Lever Brothers' Lux toilet soap in a choice of four pastel colors — pink, blue, green, white — with matching foil wraps. In New York, college girls paved a street in Rockefeller Center with Procter & Gamble's new pink Camay (above).^{*} In Chicago, other Midwestern and New England cities, television commercials promote Lever Brothers' Dove, a detergent bar that's claimed to be 25% cleansing cream. In Florida, P&G's Zest, a detergent bar containing a germicide, is being pushed.

All of these are signs of restlessness in the \$150-million† toilet bar

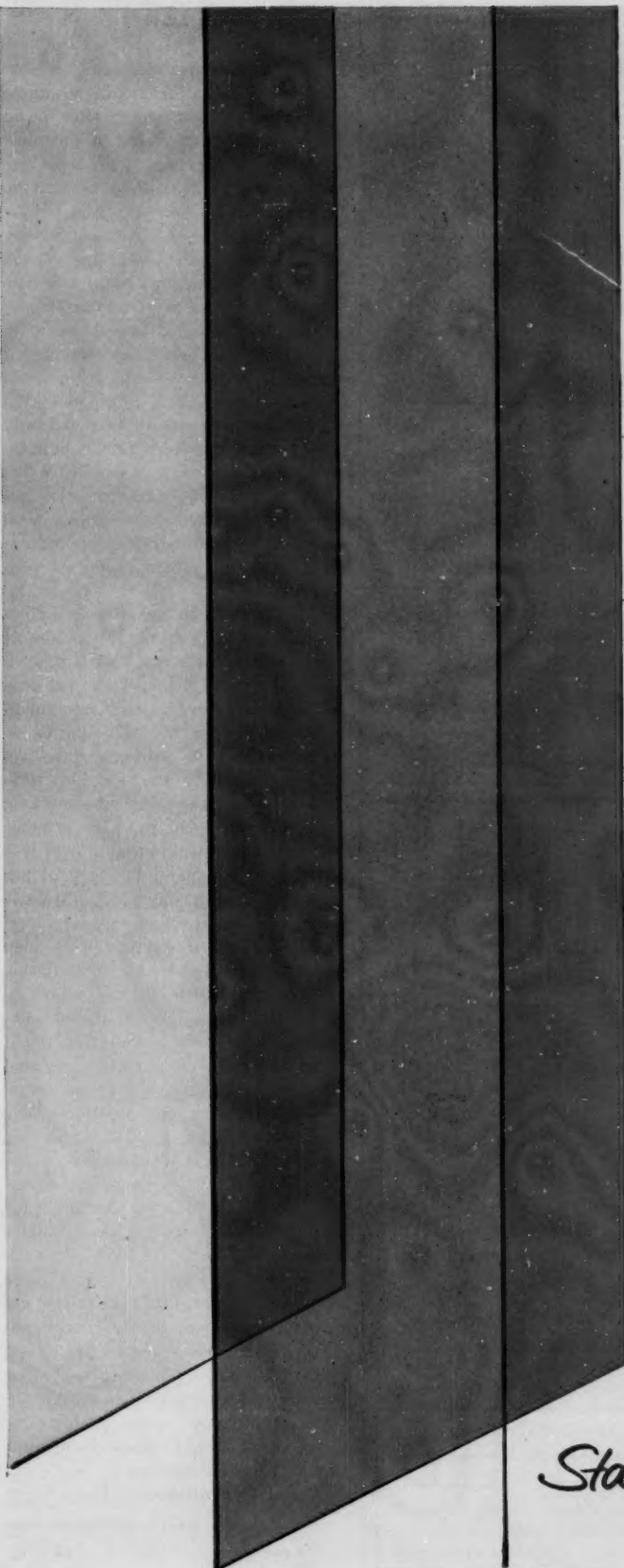
quarter of "big soap"—rumblings of coming revolutions to try to unseat the current kings: P&G's Ivory, Armour's Dial, Lever's Lux (although these three are more or less neck-and-neck runners, Ivory pulls sharply ahead in the toilet and bath bar sizes, if you include the Ivory "laundry" bar).

Either inspired or frightened by Dial's pole vault to the top on the deodorant idea, other bar-soap makers are not letting their product lines stagnate. All are busily readying new ideas of their own, at the same time bolstering positions of established brands by picking up others' successful devices. Example: P&G's Camay, reasonably secure in fifth place, has, besides color, added a foil wrap like that of Lux, is test-marketing a de-

odorant like that of Dial. It is also reported that Colgate's Palmolive (fourth-place seller) will soon have a foil wrap—embossed to carry over the idea of crinkly paper wrapper, and with the black band printed on, rather than being separate as it is now—often to supermarkets' dismay. This will be the first major Palmolive package change since its beginning.

This type of follow-up is considered necessary just to maintain a brand's present share of sales, but such products are never expected to be world-beaters. In soaps and detergents, it is axiomatic that whoever is first with promotion and distribution of a new type of product will continue to sell better than competitors' comparable products.

^{*}P&G donated the soap for a one-day display promoting a "Cleaner New York" campaign. It was later given to charity.
[†]Values on the makers' level.

An abstract graphic on the left side of the page consists of several vertical bars of varying heights and shades of gray, creating a sense of depth and structure.

CARBON BISULFIDE... UNLIMITED!

Manufacturers of viscose rayon, cellophane, grain fumigants and special solvents can look to Stauffer for Carbon Bisulfide of highest purity.

Nine plants throughout the country assure a steady supply of this basic chemical. Anticipating future needs, Stauffer has one *new* plant under construction and another in process of enlargement.

For Carbon Bisulfide of highest purity in drums and tank cars . . . talk with any Stauffer representative.

STAUFFER CHEMICAL COMPANY

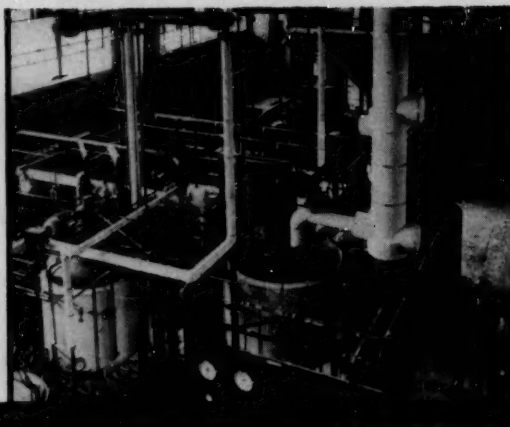
380 Madison Avenue, New York 17, N. Y.
Telephone: OXford 7-0600



Stauffer means service

If hydride
advantages
say *Yes...*

but plant
economics
say *No...*



*here's your
answer:*

**MH custom
reduction
and
condensation**

Through newly expanded facilities, (above) Metal Hydrides Incorporated can apply the profitable advantages of hydride reductions or condensations to your process. By sending us your material and having us carry out the hydride step, you gain the benefit of unmatched hydride application and production experience, perfected process-control techniques and the economy of an established plant operation. Your inquiry will bring full information!

PIONEERS IN HYDROGEN COMPOUNDS
MH Metal Hydrides
INCORPORATED

1020 CONGRESS STREET • BEVERLY, MASSACHUSETTS

Investigate Borden's

SUCCINIC ACID

Borden's high purity Succinic Acid is finding increased use as an intermediate in the manufacture of: pharmaceu-

ticals, cosmetics, polyesters, alkyd resins, plasticizers, synthetic foams and fibers, and photographic chemicals.

SPECIFICATIONS

Assay (Succinic Acid).....	99.0 wt. % min.
Melting Point.....	185°C
Appearance.....	white, crystalline
Sulfates (as SO ₄).....	0.05 wt. % max.
Iron (as Fe).....	30 ppm
Lead (as Pb).....	20 ppm
Heavy Metals.....	50 ppm
Contamination.....	none

The Borden Company also supplies acid derivatives as fumaric acid, di-other polybasic acids and polybasic butyl fumarate, and dibutyl maleate.

THE Borden COMPANY
Chemical Division

350 Madison Avenue, New York 17, N. Y.

Use this coupon to receive free laboratory samples, technical data and product literature.

Please send me samples, technical data, and product literature on the following:

☐ Succinic Acid ☐ Fumaric Acid ☐ Malic Acid ☐ Diethyl Fumarate ☐ Dibutyl Fumarate ☐ Dibutyl Maleate

NAME _____

COMPANY _____

POSITION _____

ADDRESS _____

SPECIALTIES

Green Pastures: For this reason, the soap makers find themselves most interested when they can look ahead to wide-open fields. One of the most prominent such vistas in the toilet bar part of the industry right now is the detergent bar.

Wartime use by the Army and Navy plus scattered test marketings have shown that the synthetics provide new promotable features—for example, detergent bars are said to suds better in hard water (including sea water). Introduced without advertising in hard-water test markets, Colgate's Vel Beauty Bar—a synthetic (sulfated fatty acid monoglyceride)—quickly built up a demand it could not handle. When supplies ran low, salesmen were reportedly harassed by retailers who made orders for other Colgate products contingent upon being supplied with the Vel bar.

Fact is, Colgate had trouble supplying any quantity at all. Production of the synthetic bar is much more complicated than that of soap bars. Not only do detergents need different equipment than soaps, but the resulting bar—which cannot be softened with heat and pressure like soap—is also difficult to mold. It is said that for a long time Colgate spent more to produce the bar than it was getting out of it—which might explain the lack of advertising during the product's early days.

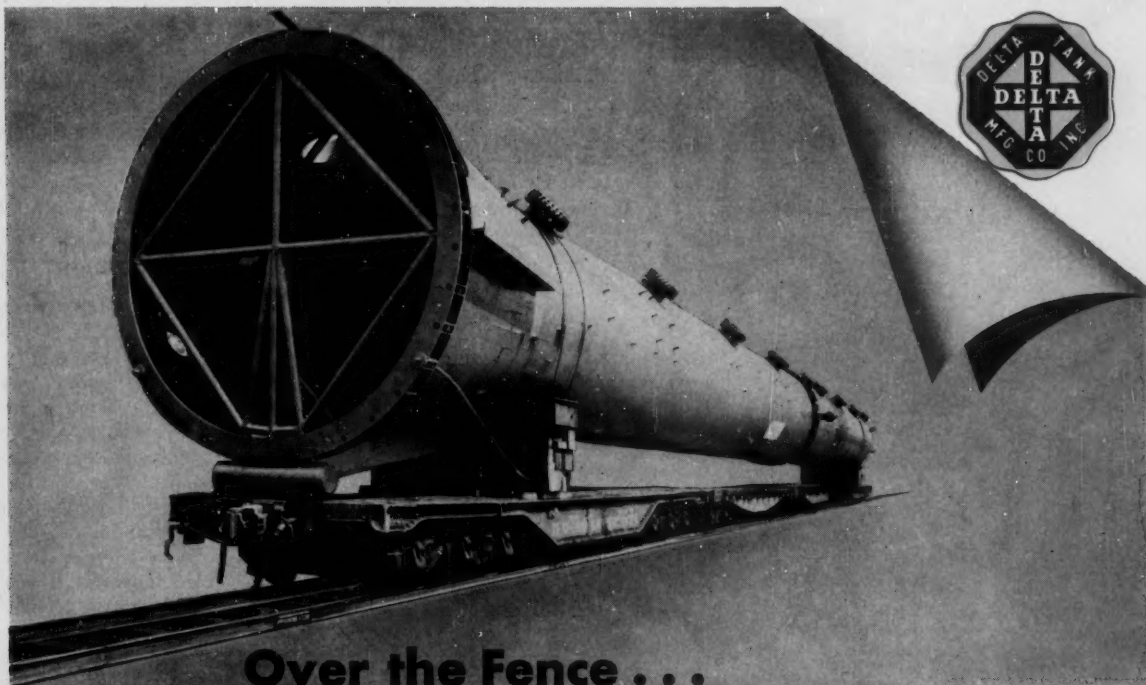
High Cost of Lather: This high manufacturing cost and the resulting high price per bar are the major retardants of a big detergent-bar sales push. Some believe that this might keep bar sales on a strictly regional basis—in hard-water areas only.

While the detergents reportedly have other advantages—e.g., leave no ring in the bathtub, don't sting the eyes—some in the trade point up these disadvantages—they lack a smooth "feel," are difficult to rinse, and sometimes cause irritation.†

Reportedly, P&G's Zest drew more irritation complaints than were expected; that's one of the things that slowed the product down after its big start in 1952. Irritation came either because the bar is mainly lauryl sulfates or possibly from a perfume ingredient. However, these complaints are said to be dwindling.

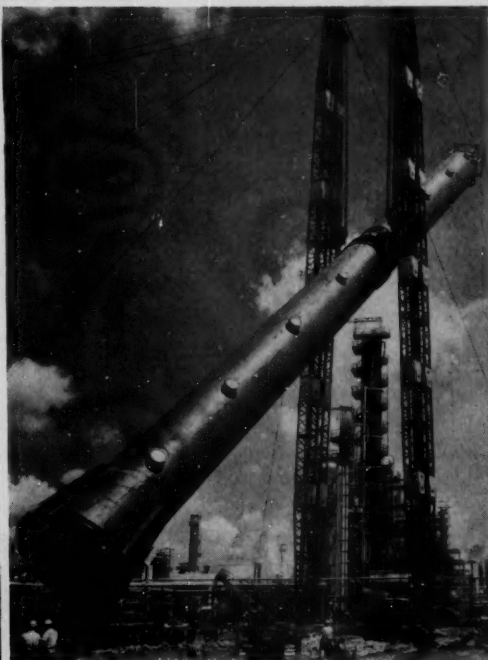
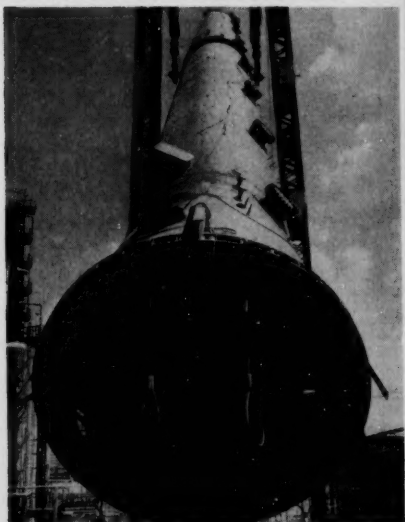
Cream Combination: In Dove, Lever

†On the other hand, some medical house suppliers have found a small but firm market among people allergic to soap and willing to pay as much as 75¢/bar.



Over the Fence . . .

It was a short railroad trip for this giant Deisobutanizer Tower after fabrication in Delta's Baton Rouge plant. The tower was built for Esso Standard Oil, whose Baton Rouge refinery's south fence is the Delta plant's north fence. Four rail cars were necessary to move the giant into place for erection by Esso's own forces. Its gross weight is 410,000 pounds, with an overall length of 207 feet, two inches—more than a ton per foot. It was fabricated complete for shipment in one piece—The Biggest Yet!



DELTA TANK MANUFACTURING CO., INC.

BATON ROUGE, LOUISIANA

PLANTS: BATON ROUGE, LA. • MACON, GA. • BEARDSTOWN, ILL.
EXPORT OFFICE: INTERNATIONAL TRADE MART, NEW ORLEANS, LA.
SALES OFFICES: NEW YORK, N. Y. • WESTWEGO, LA. • LAFAYETTE, LA.
BOSSIER CITY, LA. • HOUSTON, TEXAS • WHITTIER, CALIFORNIA

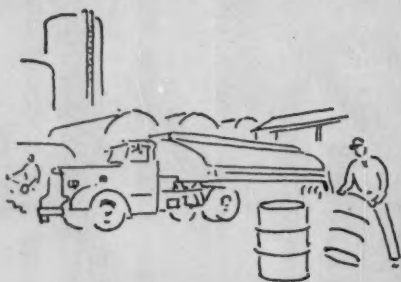
ANNOUNCING

OUR NEW NAME



WE SUPPLY GLYCOLS

from our **NEWARK** warehouse



Ethylene Glycol
Diethylene Glycol
Triethylene Glycol
Propylene Glycol, Ind. & U.S.P.
Dipropylene Glycol
Hexylene Glycol

ALCOHOLS
KETONES
ESTERS
GLYCOL ETHERS
PLASTICIZERS
CHLORINATED
SOLVENTS
GLYCOLS
AMINES
AROMATIC
SOLVENTS
ALIPHATIC
NAPHTHAS

THE
CHEMICAL SOLVENTS
INCORPORATED

60 PARK PLACE, NEWARK 2, NEW JERSEY — MAket 2-3650 WOrth 2-7763

SPECIALTIES

has combined a detergent bar with another bar idea that has become popular: adding cleansing cream.† This may be an attempt to eliminate the detergent's drying effect (adding oil to the skin is a cleansing cream function) and to help justify the bar's high price (regular bar: 2/39¢). Some people think, on the other hand, that Lever gets its cleansing cream theme from the fact that Dove, an Igepon A type (coconut oil derived) of detergent, is superfatted with stearic acid, which is a common cleansing cream ingredient. The cream idea is augmented by use of a perfume common to the cleansing creams.

Dove is, according to Lever, in the process of going national on a market-by-market basis. Other detergent toilet bars, however, are lingering in test markets. So far, the bars have become mired in caution a few steps after their running leap into the scene. Safe to assume: if Lever or one of the other soapers breaks through with the first nationwide sale of a detergent bar, others will follow—but they'll be searching for even newer ideas. It's axiomatic that in the soap business, if you don't advance, you're slipping.

Modified for Resistance

Modified silicone insulating varnish is the latest material to be offered for use in the manufacture of electrical motors and transformers operating in the Class B (130 C or more) range or higher. Sherwin-Williams offers the new varnish, which it says can meet Class F requirements (155 C) and can be pigmented to meet the stringent Class H specifications (180 C).

Silicone varnishes have previously been offered for hot-running equipment; one drawback, besides a relatively high price, has been low resistance to chemical and moisture attack. S-W says its new material will withstand sulfuric acid, vegetable fatty acids, toluene, liquefied Freon 22, and transformer oil.

Besides improved chemical resistance, the varnish is claimed to be easy to use—it can be oven-baked or air-dried. S-W says that "price has not yet been determined."

†Cleansing, or cold-cream bars are, of course, nothing new. They've been sold by specialty soap makers for years, but have only been aimed by the big makers at the mass market for the past year or so. Wilson & Co.'s recently abandoned Creamade featured cold cream, never got beyond test marketing.



he's washing his hands of it

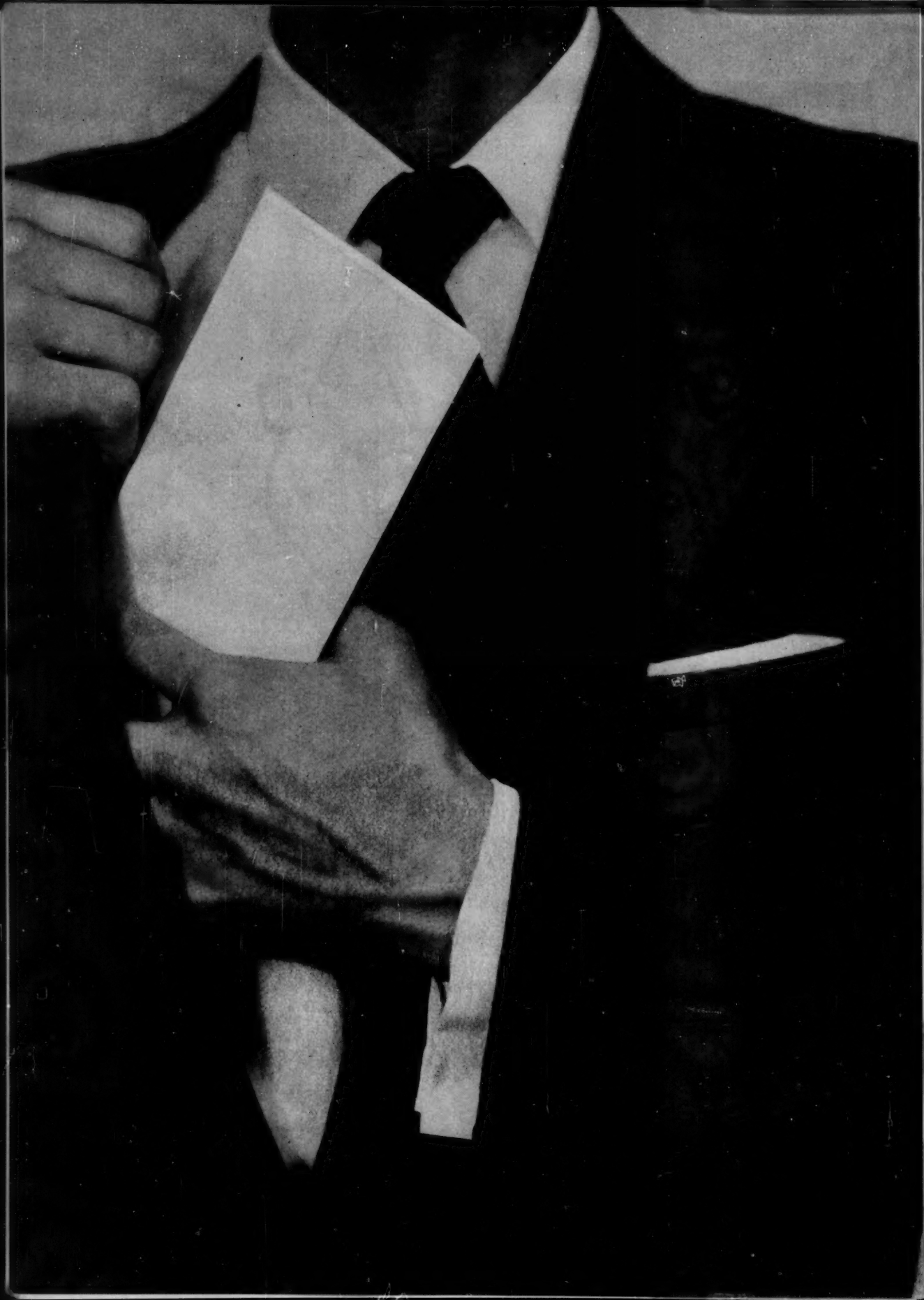
He *can*, when he uses paints formulated with GELVA emulsions... and it's the same easy soap and water cleanup for his equipment. This is only one of the advantages of polyvinyl acetate paints. Here are some more:

- | | |
|-------------------|------------------|
| No odor | Easy application |
| Extra fast drying | Easy touch-up |
| Faster cure | High hiding |
| Flat finish | Non-yellowing |

Shawinigan has successfully formulated GELVA emulsions for polyvinyl acetate paints since 1944. This unequalled experience combined with continuing research makes Shawinigan a name to remember in today's paint market. For full information write Shawinigan Resins Corporation, Dept. 1142 Springfield 1, Mass.

GELVA[®] emulsions for paints





T

The St
treng
nothe

AVIN
ly, gu
wo w
-ply,
ags c
ackap

AVIN
adpte
hippi
heavy
rit re
vitreo
high s
of frit.

AVIN
STRip
out it a
treng
ural S
nits C
rom 4

MULT
S

The Man from St. Regis

offers a pocketful of savings with
STRuctural STRip Multiwall Bags

The St. Regis STRuctural STRip Multiwall Bag gives you added strength and protection when you need it without the full cost of another ply!

SAVINGS ONE—MONEY. Without the addition of a whole new ply, gusset areas are re-inforced with STRuctural STRips between two walls for heavy packaging. This principle gives, for example, 5-ply, 270-pound performance from 4-ply STRuctural STRip bags of 230-pound total basis weight. That means a saving in packaging costs from 5 to 15%!

*Here's actual proof of performance from the
Chicago Vitreous Corp. in Cicero, Ill. . .*

SAVINGS TWO—SHIPPING. Chicago Vitreous Corporation adopted STRuctural STRip multiwall bags for packaging and shipping frit to its customers all over the country. An expensive, heavy crystalline material used for producing Porcelain Enamels, frit requires special shipping and storing protection. Chicago Vitreous chose economical STRuctural STRip bags to withstand high stresses encountered in stacking, handling and trucking of frit.

SAVINGS THREE—PACKING. Not only does the STRuctural STRip bag insure safe delivery of the valuable, high density frit but it also resists the 140° temperatures at which it is bagged. High strength of bag is obtained by reinforcing gusset areas with STRuctural STRips of kraft paper between the walls. This principle permits Chicago Vitreous to get 5-ply, 270-pound bag performance from 4-ply STRuctural STRip bags of 230 pound basis weight.



*Send in this coupon today. Find out how these savings
can be made in your plant.*

MULTIWALL PACKAGING DIVISION

St. Regis
PAPER COMPANY
150 EAST 42ND STREET, NEW YORK 17, N. Y.



Multiwall Packaging Division
St. Regis Paper Company, Dept. CW-1056
150 East 42nd Street
New York 17, N. Y.

Please send me information about the new
STRuctural STRip Multiwall Bags.

Name _____ Title _____

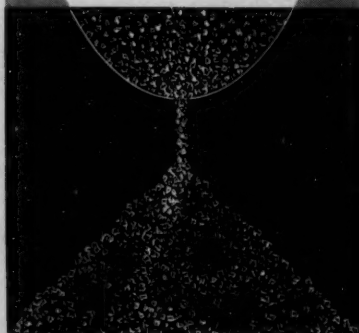
Firm _____

Address _____

City _____ State _____

**FREE-
FLOWING
CLEANING COMPOUNDS
WITH
METSO
ANHYDROUS**

ANHYDROUS SODIUM METASILICATE
($\text{Na}_2\text{O} \cdot \text{SiO}_2$)



Attractive, white granules, carefully sized to minimize dusting, keep your compounds and detergents free-flowing and overcome annoyance of gumminess. Metso Anhydrous' physical structure is the reason for this resistance to caking. The unique surface area of Metso Anhydrous also aids absorption of oil and detergent sprays without caking.

Let us send you more technical information on Metso Anhydrous for use in your compounds and detergents.

METSO ANHYDROUS
is made only by
PHILADELPHIA
QUARTZ CO.

Trademarks Reg. U. S. Pat. Off.



METSO DETERGENTS

PQ SOLUBLE SILICATES

PHILADELPHIA QUARTZ CO.
1150 Public Ledger Bldg., Phila., Pa.

SPECIALTIES

EXPANSION

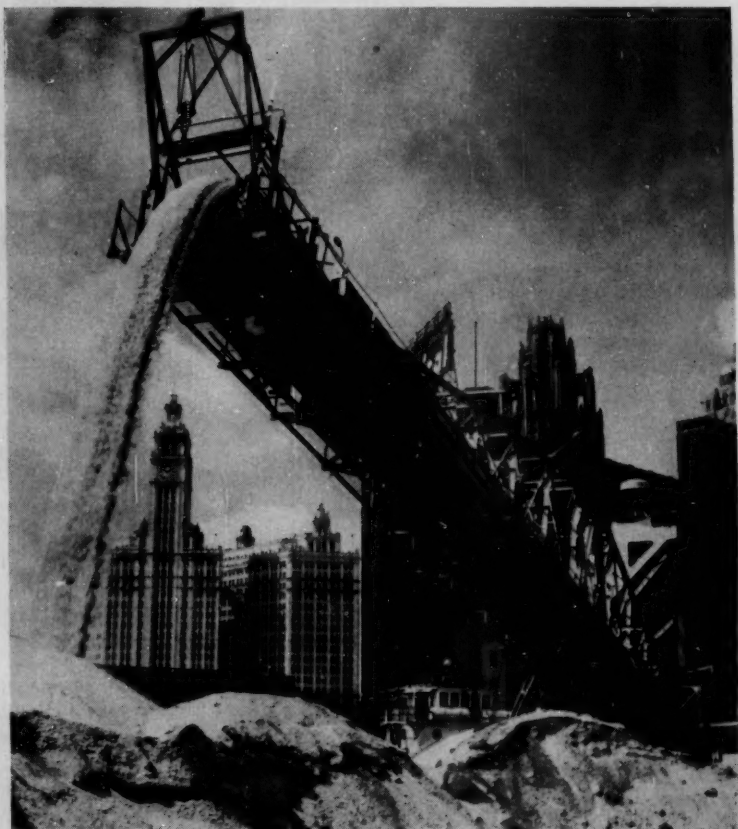
Finishing Touches: New warehouse facilities for its varnish and woodfinishing products has been opened by McCloskey Varnish Co. (Philadelphia) in Memphis, Tenn. McCloskey manufacturing plants are in Los Angeles, Philadelphia and Portland, Ore.

Colorful Step: Development of a group of high-molecular-weight diazo pigments has put Ciba into the field of supplying these colorful pigments for both coatings and plastics. Tagged Cromophthal colors, the new materials

will be made in Ciba's Toms River, N.J., plant.

Largest Leased: Fannin's Gas and Equipment Co. (Phoenix) has been leased by California Spray-Chemical Corp. to distribute Calspray's agricultural products. The merger is said to give Calspray the largest handling facilities for ag chemicals in the state, including 1,000 portable ammonia field tanks.

Tenant to Owner: Jaycee Chemical Corp. (Northford, Conn.) has just bought the 8,300-sq.-ft. structure it



WIDE WORLD

Stocking Up for Winter

ROCK SALT, some 5,500 tons of it, was being unloaded last week in Chicago as the city prepared for the onslaught of winter. The crystals, spread at a rate of about a quarter-ton per mile, have proved more effective

than sand or ashes in many cases. This just-arrived load at Chicago will likely be just a small part of the total used in months ahead; after a snow storm, as much as 700 tons of the crystals are used in a day.



your **DETERGENTS SCRUB** better



your **ALCOHOLS RUB** better
when formulated with Enjay Lower Alcohols

Ethyl Alcohol for detergents or Isopropyl Alcohol for rubbing—order from the Enjay Company, one of the world's foremost suppliers of alcohols. You are assured of a dependable supply of uniform, high quality products.

In addition, the Enjay Laboratories are at your service to assist you in the use and application of all products from Enjay's diversified line of petrochemicals.

Write or call for complete information.

Enjay offers a diversified line of petrochemicals for industry. LOWER ALCOHOLS (Isopropyl Alcohol, Ethyl Alcohol, Secondary Butyl Alcohol); HIGHER OXO ALCOHOLS (Isocetyl, Decyl, Tridecyl Alcohol); and a varied line of OLEFINS AND DIOLEFINS, AROMATICS, KETONES AND SOLVENTS.

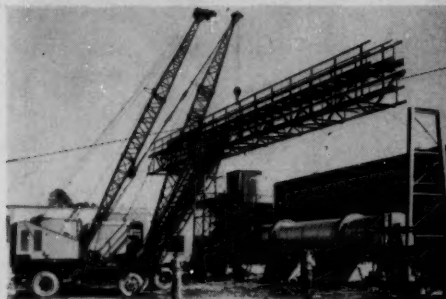


*Pioneer in
Petrochemicals*

ENJAY COMPANY, INC., 15 WEST 51st STREET, NEW YORK 19, N. Y. • Other offices: Akron, Boston, Chicago, Tulsa

October 20, 1956 • Chemical Week

6'-0" Dia. x 50'-0" Long
"Davenport" STEAM TUBE
ROTARY DRYER



DAVENPORT
 PRESSING - DRYING
 and
 COOLING Equipment
 Continuous DeWatering
 Presses
 ROTARY DRYERS
 Steam Tube, Hot Air
 and Direct Fire
 Atmospheric
 DRUM DRYERS
 ROTARY COOLERS
 Water and Air

DRYING WOOD CHIPS

This "Davenport" Steam Tube Dryer is being erected in a New Chip Board Plant for a large lumber mill in South Carolina.

This dryer reduces the moisture from wood chips prior to making them into Chip Board.

Let our engineers consult with you on your Pressing, Drying and Cooling problems or send for our catalog & for quick reference consult your Chemical Engineering Catalog.

davenport MACHINE and
 DAVENPORT, IOWA U. S. A. FOUNDRY COMPANY

*From Our
 Manufacturing
 Operations*



FINE ORGANICS

INORGANIC REAGENTS

INDICATORS

STAINS

**OVER 4000
 ITEMS
 FROM A
 SINGLE
 SOURCE**

MATHESON, COLEMAN & BELL REAGENT CHEMICALS
 INCLUDE PRACTICALLY ALL THE ITEMS USED
 IN LABORATORY WORK!

Our Reagent Organic Chemicals conform not only to the specifications shown in our price list but also to the best literature values.

The Reagent Inorganic Chemicals carry maximum-limits-of-impurities labels.

In addition to Reagent Organic and Inorganic Chemicals, many items of U.S.P., N.F., Practical and Technical grades are available.

OUR NEW CATALOG LISTING MORE THAN 4000
 ITEMS WILL BE SENT ON REQUEST

MATHESON **COLEMAN & BELL**



DIVISION OF THE MATHESON COMPANY, INC.

Manufacturing Chemists

EAST RUTHERFORD, NEW JERSEY • NORWOOD CINCINNATI, OHIO

SPECIALTIES

has been occupying for the past nine months. A producer of polyester-fiber-glass pastes (tradenamed Bondo), Jaycee sells largely to autobody-repair shops throughout the U. S. and neighboring countries.

PRODUCTS

Twin Killer: Designed to kill both bacteria and fungi, Meta-San has just been marketed by Metalsalts Corp. (Hawthorne, N.J.). A mercurial compound, it is suggested as a mildewcide for oil and water-base paint. It's soluble in water and in a wide range of organic solvents.

Foam Killers: Witco Chemical Co. (New York) is now introducing two new antifoamers for the papermaking industry. Both nonionic, surface-active products, they are used in proportions of 1 to 3 lbs./ton of finished paper. Type 2A is for scrap paper de-inking processes, Type 3 as a leveling agent



Acrylic Undercoating

NOVEL use for clear acrylic sprays has been uncovered by Krylon, Inc. (Norristown, Pa.). The firm, major producer of the plastic aerosol sprays, suggests that bouffant crinoline petticoats be coated with the plastic to stiffen them. Big advantage of the plastic, according to Krylon, is that it lasts longer than conventional starching.



*From Ore Bed to Finished Product
There's only one basic producer*

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

MINES

SYLVITE ORE - KCl and NaCl

REFINES

POTASSIUM CHLORIDE - KCl

MANUFACTURES

CAUSTIC POTASH - KOH

You get important "extras" from International, the *one basic producer of Caustic Potash*. Unquestioned security of supply. Uniform quality. High purities. All standard grades. Prompt shipments.

99.95+% pure electrolytic grade KCl is refined at Carlsbad from sylvite ore and shipped to Niagara Falls for the production of KOH and other potash salts. Call the office near you for fast service.

CAUSTIC POTASH • CARBONATE OF POTASH • POTASSIUM CHLORIDE
MAGNESIUM OXIDE • LIQUID CHLORINE • MURIATIC ACID
SULFATE OF POTASH • HYDROFLUOSILICIC ACID



POTASH DIVISION INTERNATIONAL MINERALS & CHEMICAL CORPORATION • GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6 • 61 BROADWAY, NEW YORK CITY 6 • MIDLAND, TEXAS • FULTON NATIONAL BANK BUILDING, ATLANTA, GA.

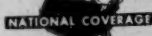
October 20, 1956 • Chemical Week

EMPLOYMENT OPPORTUNITIES

IN THE CHEMICAL PROCESSING INDUSTRIES

- **Displayed Rate**—\$19.50 per inch. Contract rates on request. Advertising inch measures 7/8 inch vertically on one column. Subject to Agency Commission. 3 columns to a page.

- **Closing Date**—Each Tuesday, 11 days prior to publication date.



- **Undisplayed Rate**—\$1.80 a line, minimum 3 lines. To figure advance payment, count 5 average words as a line. 10% discount if full payment made in advance for 4 consecutive insertions. Position wanted ads 1/2 above rate.

- **Box Numbers** count as one additional line.

Send NEW ADS & INQUIRIES to Classified Adv. Div. of Chemical Week; P.O. Box 12, N.Y. 36, N.Y.

ENGINEERS

Are you worth up to
\$10,000 A YEAR?

Important permanent positions, paying from \$6,500 to \$10,000 a year with unusual future opportunity, have been created by the expansion program of our large, long-established engineering and construction firm. We need qualified engineers, designers and draftsmen experienced in structural, concrete, mechanical and piping design. Engineering offices are in several major American cities and Canada. Excellent working conditions. Generous company benefits. Our employees know of this ad.

Investigate this opportunity. Write today, giving age, education and experience. Your inquiry will be kept strictly confidential and will be answered promptly.

P-3061 CHEMICAL WEEK

Classified Adv. Div., P.O. Box 12, New York 36, N.Y.

NEW PRODUCT DEVELOPMENT

Good opportunity in N.Y. area for young man to do field work in new product development. One year or more experience preferable. Must have chemistry degree & possess initiative & imagination. Salary commensurate with ability. P-3198, Chemical Week Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FLOOR TILE CHEMIST Wanted

Experienced manufacture vinyl tile. Liberal benefit programs. Replies confidential. Reply

P-3167, CHEMICAL WEEK

Class. Adv. Div., P. O. Box 12, New York 36, N.Y.

SALES EXECUTIVE

seeking major field sales responsibility. Technical degree. 15 years experience in organic chemicals-field sales, staff work and sales supervision. PW-3232, Chemical Week Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FLOOR WAX CHEMIST

Unusual opportunity as Chief Chemist at long established and progressive Chicago wax manufacturer. Develop new Floor Coatings and improve existing formulations. Supervise other lab personnel. Other fields of interest: cleaners, surfactants, and chemical specialties. Liberal salary. P-3194 Chemical Week, 520 N. Michigan Ave., Chicago 11, Ill.

TILING ENGINEER WANTED

Vinyl Asbestos or Vinyl

Excellent opportunity for man having several years experience. Liberal benefit programs. Location, Penna. Replies confidential. Reply

P-3168, CHEMICAL WEEK

Class. Adv. Div., P. O. Box 12, New York 36, N.Y.

CHEMIST SPECIALTIES OR WAX EMULSIONS

We require a man experienced in the development of waxes, polishes, or other chemical specialties. Must be able to test against specifications. Age under 40 preferred, but "know how", initiative, and determination to grasp opportunities is the prime requisite.

We suggest you investigate this opportunity afforded by one of the most modern and up to date laboratories of its kind. Congenial environment, company paid for retirement program, and a liberal salary arrangement to the right man, make this a very worthwhile proposition.

Please phone Mr. C. W. McDermott, Trinity 7-6200

Franklin Research

5134 Lancaster Ave., Phila. 31, Pa.

Positions Wanted

Chemical Engineer, Age 32. Sales experience and process design work. Wants position with a challenge. PW 2889, Chemical Week.

Management Ambitions—Young, married, M.S. in chemistry with five years of diversified research experience wishes to utilize this technical background and ability in an administrative capacity. Seeks organized management training program. Mature, well read, imaginative. West Coast or foreign preferred. PW-3235, Chemical Week.

Selling Opportunity Wanted

Established Chemical Manufacturers' Agent desire additional line. Excellent technical and sales background. Eastern Penna., Southern New Jersey, Del. and Md. Reply RA-3169, Chemical Week.

SALES OPPORTUNITIES

If you are a manufacturer seeking new or added sales outlets—or if you are a manufacturer's agent or chemicals distributor with the capacity, time and energy to take on additional lines—make your interests known in the column of **CHEMICAL WEEK**. The right agent or jobber teamed up with the saleswise manufacturer makes the right combination for the hard selling days ahead. There's profit for both, which can be initiated through low-cost classified advertising. Write **TRACERS Dept.**, Chemical Week, 330 W. 42nd St., N.Y. 36, N.Y.

TRACERS

- **USED/SURPLUS EQUIPMENT**
- **CHEMICALS WANTED/OFFERED**
- **SPECIAL SERVICES**
- **BUSINESS OPPORTUNITIES**
- **Closing Date**—Each Tuesday, 11 days prior to publication date.

Send NEW ADS & INQUIRIES to —
Classified Adv. Div. of Chemical
Week; P.O. Box 12, N.Y. 36, N.Y.

SURPLUS CHEMICALS WANTED

Chemicals—By-Products—Plasticizers

Pigments — Resins — Solvents

CHEMSOL, INC.

70 Dod Street, Elizabeth, N.J. EL 4-7654

BUYERS OF SURPLUS

CHEMICALS—OILS—SOLVENTS

DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.

BARCLAY CHEMICAL COMPANY, INC.

75 Varick Street New York 13, N. Y.
WORTH 4-3120

SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION

96-02 Beaver Street, New York 5, N. Y.
HAnover 2-6970

SURPLUS BOUGHT

ODD LOTS—DISCONTINUED RAW MATERIALS
—SPENT OR CONTAMINATED SOLVENTS
RESIDUES—METAL SLUDGES
OBSOLETE PLANT INVENTORIES
Industrial By-Products Surplus Co.
DIV. OF ACETO CHEMICAL CO., INC.
40-400 Lawrence St., Flushing 34, N. Y.
INdependence 1-4100

CUSTOM GRINDING

- Ultra Fine or Coarse
- Specialty or Volume
- Heat Sensitive Materials
- Complete Blending and Grinding service on unit or contract basis

**A. Cramer Corp. 10881 S. Central Avenue
Box 682 Oak Lawn, Illinois**

- 2—7500 gal. type 316 S.S. open top tank
- 1—1200 gal. type 316 S.S. open top tank

Chemical & Process Machinery Corp.
52 9th Street
Brooklyn, N. Y.
Hyacinth 9-7200

Plant for Rent

Paterson, N.J. One story brick, 26,000 ft. sprinklered high pressure steam, RR siding, underground storage tanks, fenced yard, unrestricted. PFR-2174, Chemical Week.

For Sale

Bird 32 x 50 Solid Bowl Continuous Centrifugal Filter, Type 316 stainless steel, Built 1953. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Distillation Column, Copper, 42" dia. with 40 bubble cap plates. Perry, 1415 N. 6th St., Phila. 22, Pa.

Sperry, 30" x 30" Cast Iron Plate & Frame Filter Press, 36 chambers. Perry, 1415 N. 6th St., Phila. 22, Pa.

MANAGEMENT SERVICES

- General Consulting
- Management
- Patents
- Systems Engineering
- Instrumentation
- Equipment Design
- Catalyst Development
- Translation
- Chemical & Bacteriological Analysis

NORMAN APPELZWEIG ASSOCIATES

Specialists in Applied Biochemistry
Product Development Consultants to the Food, Drug and Cosmetics Industries.
131 Christopher Street
New York 14, New York

BERG BOAT COMPANY

Specialists in
MARINE TRANSPORTATION OF CHEMICALS

Transportation Systems
Coastwise and Inland Waterways
Studies—Reports—Contracts
Frederick C. Berg—Marine Engineer
Georgetown, Maryland—Telephone Cecilton 4805

JAMES P. O'DONNELL

Consulting Engineer

Professional Engineering for the
Petroleum and Process Industries

39 Broadway
New York 6, N.Y.
Beaumont, Texas Tulsa, Oklahoma

SIRRIE

ENGINEERS

Plant design & surveys covering Chemical Electrochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment; Analysis & Reports
J. E. SIRRIE CO.
Greenville South Carolina

ROGER WILLIAMS

Technical & Economic Services, Inc.

- ENGINEERING ECONOMICS
- MARKET RESEARCH
- PRODUCT EVALUATION

Write for "Profit Evolution"
148 East 38th Street, New York City 18
Murray Hill 5-5357

Wisconsin Alumni Research Foundation

Project Research Consultation and Production Control Service in Biochemistry, Chemistry, Bacteriology, Pharmacology, and Insecticide Testing and Screening.

Write for price schedule

Wisconsin Alumni Research Foundation
P.O. Box 2059-G • Madison 1, Wisconsin

Professional Assistance

in solving your most difficult problems
is offered by consultants whose cards
appear in this section.

SPECIALTIES

for starch and proteinaceous adhesive-type coating colors.

Fire Protection: Phosphorylamide for permanent flameproofing of cellulosic textile fibers is now available from Wica Chemicals, Inc. Applied in cold padding operations and then dried and cured at 290 F, the new chemical treatment affects the hand of the textile only slightly, the company declares. Sold in 50% solutions, it is diluted to 4-20% solution for use, and is said to be compatible with most other textile processes.

Gleam Renewer: An air-drying lacquer tagged Resolac, designed for application to polyester panels, has just been introduced by Resolite Corp. (Zelienople, Pa.). Available in clear and in seven colors, Resolac can be applied with low-pressure spray guns or by brush—it is said to restore the brightness and luster of weather-dulled surfaces. Retail prices: \$9.80/gal. (for 400 sq. ft.), \$3.45/qt., \$2.45/pt.

Cool Sudser: Sweater-Fluff, a new cold-water soap for use on fine wools, has just been introduced by American Petrochemical Corp. (Minneapolis). Sweater-Fluff, in 12-oz. cans, will be marketed nationally by Baskin Laboratories, Inc. (Minneapolis).

Cortisone Aerosol: One of the pioneering ethical drug products to be packaged in aerosols is Roussel Corp.'s (New York) Topicort Spray. A hydrocortisone form for dermatological use, the new product is put out in a coated glass container by Fluid Chemical Corp. (Newark, N.J.).

Aerosols on Hand: Campana's Italian Balm hand lotion is now out in aerosol form. G. Barr and Co. (Chicago) is producing the lotion in a fast-drying formulation; the metal spray-can of Italian Balm retails at \$1.25.

Easier Traveling: New material for incorporation in asphalt paving is now offered by Minco Products Corp. (Saginaw, Mich.). A colloidal mineral material, the Minco Asphalt Stabilizer is claimed to boost the load-bearing, tensile and shear strength of asphalt—and to provide a smooth, nonskid surface similar to that obtained by mixing rubber into asphalt.

CATALYTIC

*a lot of
hot air...*

may be used over and over again at no operating cost to you with a Catalytic Combustion heat recovery system. Burn process exhaust fumes and save heat losses while at the same time controlling air pollution. For details on your specific application, write

CATALYTIC

COMBUSTION CORPORATION

4546 Grand River Ave., Detroit 8, Mich.

Representatives in Industrial Areas

Using

ACTIVATED CARBON

for

LIQUID PURIFICATION?

NEW DEVELOPMENTS

may be of interest to you. . . .

EASIER FILTRATION . . .

controlled particle sizes slightly coarser than powder have been developed for improved handling and easier filtration.

A variety of granular sizes are also offered if fixed bed percolation techniques are of interest to you.

WRITE FOR details and samples.

BARNEBEY-CHENEY

Columbus 19, Ohio — St. Johns, Quebec

CHEMICAL WEEK • ADVERTISERS INDEX

October 20, 1956

ALUMINUM CO. OF AMERICA 81 Agency—Ketchum, MacLeod & Grove, Inc.	FULLER CO., THE 93 Agency—O. S. Tyson & Co., Inc.	TITANIUM METALS CORP. OF AMERICA 15 Agency—W. L. Towne Adv.
AMERICAN BRITISH CHEMICAL SUP- PLIES, INC. 64 Agency—Richard Lewis, Adv.	GENERAL AMERICAN TRANSPORTATION CORP. TANK CAR DIV. 6 Agency—Weiss & Geller, Inc.	TRUBEK LABORATORIES, INC. 53 Agency—Ray Ellis, Adv.
AMERICAN CYANAMID CO., PETRO- CHEMICALS DEPT. 86 Agency—Hazard Adv. Co.	GENERAL ELECTRIC CO. 78 Agency—Benton & Bowles, Inc.	TRULAND CHEMICAL CO. 52 Agency—Ray Ellis, Adv.
AMERICAN MINERAL SPIRITS CO. 36 Agency—Leo Burnett Co.	GIRDLER CO., THE 63 Agency—The Griswold-Eshleman Co.	UNION BAG-CAMP PAPER CORP. 95 Agency—Smith, Hagel & Knudsen, Inc.
BAKELITE CO., DIV. OF UNION CAR- BIDE & CARBON CORP. 65 Agency—J. M. Mathes, Inc.	GLYCERINE PRODUCERS ASSOC. OF AMERICA 9 Agency—G. M. Basford Co.	UNITED STATES BORAX CHEMICAL CORP., PACIFIC COAST BORAX CO. DIV. 104 Agency—Howard M. Irwin & Co.
BAKER CHEMICAL CO., J. T. 44-45 Agency—Wildrick & Miller, Inc.	GRINNELL CO., INC. 10 Agency—Horton-Noyes Co.	U.S. INDUSTRIAL CHEMICALS CO. 95 Agency—G. M. Basford Co.
BAKER & ADAMSON PRODUCTS, GEN- ERAL CHEMICAL DIV., ALLIED CHEMI- CAL & DYE CORP. 3rd Cover Agency—Atherton & Currier, Inc.	GULF OIL CORP. 30 Agency—Ketchum, MacLeod & Grove, Inc.	VICTOR CHEMICAL WORKS 57-60 Agency—The Buchen Co.
BALTIMORE & OHIO RAILROAD 84 Agency—Richard A. Foley Adv., Inc.	HALL CO., THE C. P. 62 Agency—Crutten & Eger Assoc.	VULCAN CONTAINERS, INC. 68 Agency—Clarence H. Russell & Assoc.
BARECO WAX CO. 14 Agency—John C. Fellows Co., Adv.	HARSHAW CHEMICAL CO., THE 6 Agency—The Holland G. E. Ullman Organization	WITCO CHEMICAL CO. 4th Cover Agency—Hazard Adv. Co.
BARNESBY-CHENEY CO. 113 Agency—Byer & Bowman, Adv.	HAVEG INDUSTRIES, INC. 82 Agency—The Holland G. E. Ullman Organization	WOLF & CO., JACQUES 76 Agency—Riedl & Freede, Inc.
BLAW-KNOX CO. 4 Agency—Ketchum, MacLeod & Grove, Inc.	HERCULES POWDER CO. 96 Agency—Fulmer & Smith & Ross, Inc.	WYANDOTTE CHEMICALS CORP. 72-73 Agency—Brooke, Smith, French & Dorrance, Inc.
BORDEN CO., THE 102 Agency—Fulmer & Smith & Ross, Inc.	HUDSON PULP & PAPER CORP. 66-67 Agency—Wilbur & Clango Adv., Inc.	
BUFFALO FORGE CO. 38 Agency—Meivon F. Hall Co.	INLAND STEEL CONTAINER CO. 83 Agency—Weiss & Geller, Inc.	
CARBIDE & CARBON CHEMICALS CO., DIV. OF UNION CARBIDE & CARBON CORP. 99 Agency—J. M. Mathes, Inc.	INTERNATIONAL MINERALS & CHEMI- CAL CORP. 111 Agency—C. Franklin Brown, Inc.	tracers SECTION (Classified Advertising) F. J. Eberle, Business Mgr.
CATALYTIC COMBUSTION CORP. 113 Agency—Ellington & Co., Inc.	KAISER ALUMINUM & CHEMICALS CORP. 50-51 Agency—Young & Rubicam, Inc.	CHEMICALS: Offered/Wanted 112
CELANESE CORP. OF AMERICA 11, 55 Agency—Ellington & Co., Inc.	MARATHON CORP. 5 Agency—Cormack-Imse-Beaumont, Adv.	EMPLOYMENT 112
CHEMICAL & INDUSTRIAL CORP. 29 Agency—Strauchen & McKim, Adv.	MATHESON CO., THE 110 Agency—Firestone Adv. Agency	EQUIPMENT: Used/Surplus New For Sale 112
CHEMICAL SOLVENTS INC., THE C. P. 104 Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.	MERCHANTS CHEMICAL CO., INC. 26 Agency—G. M. Basford Co.	WANTED 112
CLARK EQUIPMENT CO. 56 Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.	METAL HYDRIDES, INC. 102 Agency—Creamer-Towbridge Co.	MANAGEMENT SERVICES 113
CLIMAX MOLYBDENUM CO. 35 Agency—G. M. Basford Co.	MORTON SALT CO. 1 Agency—Neuman, Louis, & Brody, Inc.	SPECIAL SERVICES 112
CONSUMERS POWER CO. 91 Agency—Commonwealth Services, Inc.	NITROGEN DIV., ALLIED CHEMICAL & DYE CORP. 13 Agency—G. M. Basford Co.	
CONTINENTAL OIL CO. 77 Agency—Benton & Bowles, Inc.	NORFOLK & WESTERN RAILWAY 37 Agency—Houck & Co., Inc.	
CURTISS-WRIGHT CORP. 20 Agency—Burke, Dowling, Adams, Inc.	NUODEX PRODUCTS CO., INC. 49 Agency—R. T. O'Connell Co.	
DAVENPORT MACHINE & FOUNDRY CO. 110 Agency—Barnden Bros., Inc.	OLIN MATHIESON CHEMICAL CORP. 2nd Cover Agency—Doyle, Kitchen & McCormack, Inc.	
DAY CO., INC., THE J. H. 71 Agency—Strauchen & McKim, Adv.	ORONITE CHEMICAL CO. 73 Agency—L. C. Cole Co.	
DELTA TANK MANUFACTURING CO. 103 Agency—Sewell Advertising Agency, Inc.	OKY-CATALYST, INC. 42 Agency—Gray & Rogers, Inc.	
DORR-OLIVER, INC. 79 Agency—Sutherland-Abbott, Adv.	PHILADELPHIA QUARTZ CO. 108 Agency—The Michener Co., Adv.	
DOW CHEMICAL CO., INC., THE 89 Agency—MacManus, John & Adams, Inc.	PITT-CONSOL CHEMICAL CO. 80 Agency—W. E. Walker Adv., Inc.	
DOWNINGTON IRON WORKS, INC. 48 Agency—The Buchen Co.	ROHM & HAAS CO. 60 Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.	
DRACO CORP., THE 85 Agency—The Jayne Organization	SCIENTIFIC DESIGN CO. 40 Agency—Michel Cather, Inc.	
EASTERN STATES CHEMICAL ORP. 92 Agency—Ruthrauff & Ryan, Inc.	SEMET-SOLVAY PETROCHEMICAL DIV., ALLIED CHEMICAL & DYE CORP. 16 Agency—Albertson & Currier, Inc.	
ENJAY CO., INC. 109 Agency—McCann-Erickson, Inc.	SHAWINIGAN RESINS CORP. 105 Agency—Wilson, Haight, Welch & Grove, Inc.	
ESCAMBIA CHEMICAL CORP. 7 Agency—Gedwin Adv. Agency	SHELL CHEMICAL CORP. 39 Agency—J. Walter Thompson Co.	
ETHYL CORP. 19 Agency—H. B. Humphrey, Alley & Richards, Inc.	SOLVAY PROCESS DIV., ALLIED CHEMI- CAL & DYE CORP. 33 Agency—Atherton & Currier, Inc.	
FEDERATED METALS DIV. AMERICAN SMELTING & REFINING CO. 94 Agency—John Mather Lupton Co.	SONNEBORN SONS, INC., L. 12 Agency—St. Georges & Keyes, Inc.	
FISHER CHEMICAL CO., INC. 3 Agency—Frelwald & Coleman, Adv.	ST. REGIS PAPER CO. 106-107 Agency—Cunningham & Walsh, Inc.	
FOOD MACHINERY & CHEMICAL CORP. 43 Agency—James J. McMahon, Inc.	STALEY MANUFACTURING CO., A. E. 46 Agency—Ruthrauff & Ryan, Inc.	
FOSTER WHEELER CORP. 47 Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.	STAUFFER CHEMICAL CO. 101 Agency—John Mather Lupton Co.	
	STEPAN CHEMICAL CO. 2 Agency—Frank C. Nahser, Inc.	

ADVERTISING STAFF

Atlanta 3 Robert H. Powell Rhodes-Haverty Bldg., Walnut 5778-2383	
Boston 16 850 Park Square Building Hubbard 2-7160	
Chicago 11 Alfred D. Becker, Jr., Francis E. Stewart, 520 N. Michigan Ave., Mohawk 4-5800	
Cleveland 15 Vaughan K. Dissette, 1610 Hanna Bldg., Superior 1-700	
Dallas 2 Gordon L. Jones, Adolphus Tower Bldg., Main & Ackard Sts., Pros- pect 7-5064	
Detroit 26 856 Penobscot Bldg., Woodward 2-1798	
London H. Lagler, McGraw-Hill House, 96 Farrington St., E.C. 4, England	
Los Angeles 17 Peter Carberry, 1125 West Sixth St., Madison 6-9351	
New York 36 Knox Armstrong, P. F. McPherson, Charles F. Onasch, L. Charles Todaro, 830 West 42 St. Longacre 4-3000	
Philadelphia 3 William B. Hannum, Jr., Architects Bldg., 17th & Sansom Sts., Rittenhouse 6-0670	
Pittsburgh 22 919 Oliver Bldg. Atlantic 1-4707	
San Francisco 4 William C. Woolston, 68 Post St., Douglas 2-4600	
St. Louis 8 8615 Olive St., Continental Bldg., Jefferson 5-4807	



B&A research utilizes the most modern spectrographic, optical and physical testing equipment, including this electron microscope.

TYPICAL EXAMPLES

of new or improved reagents offered by B&A in recent months:

Cupriethylene Diamine Solution

... for determining disperse viscosity of cellulose

Acid Sulfuric, 52% Reagent, Primary Standard

... for direct standardization of alkaline solutions

Sodium Hydroxide, 50% Solution (Low Carbonate) Reagent

... eliminates time and work in dissolving and filtering NaOH pellets

Acid Nitric, Red Fuming,

Sp. Gr. 1.56-1.57. Tech.

... made for special uses requiring dissolved oxides (as NO_2) approx. 14%

Acid Nitric, 65%, Reagent Special

... for Huey test

Pyrocatechol, Technical

... addition agent for fluoroborate plating baths

Thioacetamide

... replaces H_2S gas as a precipitating agent

Lithium Fluoride

... another of B&A's special fluorides for research and development uses.

HOW B&A RESEARCH DEVELOPS NEW and BETTER REAGENTS

One way to look at a research program is its size and scope. Another, its results.

If you were to visit Baker & Adamson's research and development laboratories, you would see the finest in modern industrial research equipment. You would tour a number of specialized laboratories, including a

section for work with radioactive substances. You would see unfold a continuous program with one objective—to keep B&A products the best obtainable.

Look at the *results* of this program, and you see a steady flow of new and improved reagents. A few typical examples are listed here. They are

representative of a wide range of recent reagent developments—some for specialized uses in many different fields . . . some which have universal application in *all* control and research laboratories.

Whatever your reagent needs, you will find the very latest developments coming from B&A.



BAKER & ADAMSON[®] Reagents

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany* • Atlanta • Baltimore* • Birmingham* • Boston* • Bridgeport* • Buffalo* • Charlotte* • Chicago* • Cleveland* • Denver* • Detroit* • Houston* • Jacksonville • Kalamazoo • Los Angeles* • Milwaukee • Minneapolis • New York* • Philadelphia* • Pittsburgh* • Providence* • St. Louis* • San Francisco* • Seattle • Kennewick* and Yakima (Wash.)

In Canada: The Nichols Chemical Company, Limited • Montreal* • Toronto* • Vancouver*

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

*Complete stocks carried here.

**ALL SIGNS
POINT TO**

WITCO DRIERS

*for better
paint performance*

Behind every Witco product stand 36 years of experience in the production of quality chemicals. From the selection of raw materials to the finished product, Witco Driers are made under strictest quality control. These Witco Driers are your assurance of top performance:

Witco Naphthenates—(Calcium, Cobalt, Iron, Lead, Manganese and Zinc) ... the traditional driers.

Witco Octoates—(Calcium, Cobalt, Lead and Zinc ... metallic salts of 2-ethylhexoic acid (uniform composition), have low viscosity, light color, no residual odor, excellent drying power under high humidity.

Witalls®—(Cobalt, Iron, Lead and Manganese) ... made with highly refined tall oil acids. Poured for pound replacements of naphthenates.

Write today for complete technical information and samples.



36 Years of Growth

WITCO CHEMICAL COMPANY

122 East 42nd Street, New York 17, N. Y.

Chicago • Boston • Akron • Atlanta • Houston • Los Angeles
San Francisco • London and Manchester, England

EXCELLENT COMPATIBILITY

ACCURATE METAL CONTENT

UNIFORM ACTION

ALL-WEATHER STABILITY

Partial List of WITCO Products

Chemicals
Stearates • Stabilizers
Wetters • Plasticizers
Carbon Black
Witalls® (Fatty Acids, Calcium Carbonate)
Sulfuric Acids • Adhesives
Rubber Additives